



**UNIVERSITY OF GOTHENBURG**  
**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

# Leading the Change

Digital Leaders Facilitating MNEs' Investment Behaviour

*Gothenburg School of Business, Economics and Law*

*Graduate School*

*Master's Degree Project in Innovation and Industrial Management*

*Authors: Patricia Jahn & Veronika Barta*

*Supervisor: Johan Brink*

*Gothenburg, Spring 2023*

## Abstract

In our ever-changing world guided by technological advancements and data-driven disruptions, enterprises need adaptation and development strategies to stay competitive. Digital transformation (DT) has great potential to help organisations maintain their market position in these turbulent times. This is through innovatively recombining digital technologies and business models to enhance value creation. Within DT, digital solutions enable organisations to integrate their resources and strengthen their business models, thus, it is recognised to potentially disrupt industries in the future. One of these industries is the industrial goods sector which is well-established with many incumbents being large multinational enterprises (MNEs). These MNEs are entering a new era of DT and face numerous challenges. Therefore, MNEs must undertake digital investments that are internally aligned with their strategies and environmental changes. These digital investments are core responsibilities of digital leaders. Accordingly, the purpose of this study is to investigate how MNEs' digital investment behaviour is facilitated by digital leaders while aligning with their corporate strategies. In addition, the study focuses on the Nordic region since it is renowned for its well-developed digital infrastructure and a high level of involvement in the use of modern technologies.

To gain an in-depth understanding of how digital leaders facilitate the organisation's digital investment behaviour, the study applied a qualitative research strategy with an abductive approach. This was done by conducting semi-structured interviews at six Nordic business-to-business MNEs in the industrial goods sector with four executives and seven managers, with the collected data being analysed through a thematic approach.

By analysing the theoretical framework and empirical findings, the research suggests that digital leaders create and foster an alignment between the corporate strategy and their digital initiatives to establish transparent communication between all stakeholders when assisting a holistic understanding of the company's vision at all organisational levels. Digital leaders continuously assess the status quo of their digitalisation efforts by constructing roadmaps of how they can increase the organisation's digital maturity levels. In addition, digital leaders ensure that the investments in digital technologies are anchored in the corporate strategy and guarantee a seamless integration by building the required capabilities and creating the appropriate knowledge. Finally, digital investment behaviour is impacted by MNE-specific factors which must be considered throughout the decision-making process with an emphasis on managing organisational change.

**Keywords:** *Digital investment behaviour, Digital transformation, Digitalisation, Digital leadership, Organisational change, Digital capabilities, Digital strategy*

## Acknowledgements

We would first like to thank the third party we collaborated with for selecting the sample for this study and contacting the interviewees. This study would not have been the same without their support and drive. We would also like to express our gratitude to the respondents for taking the time to participate and contribute valuable knowledge and information. Replying to all our requests and sharing their expertise within the topic helped us to deeply understand digital investment behaviour in practice.

We want to express our utmost appreciation to our supervisor, Johan Brink, for providing us with the feedback and support needed to facilitate our thesis process. In addition, we would like to show our gratitude towards our fellow students for helping us with insightful and constructive feedback. Several points of view supported us in broadening our perspectives to consider new and better ways to elevate this study.

Finally, we as researchers feel privileged for the collaboration between us, with equal amounts of effort put into the entire process. We have spent countless days with endless discussions (and snacks) but also supporting each other by having equally strong dedication, and we both have grown and learned tremendously from this process.

*Gratefully,*



---

Veronika Barta

2023-05-24



---

Patricia Jahn

# Table of Contents

<b>1</b>	<b>Introduction.....</b>	<b>9</b>
1.1	Research Purpose and Research Question .....	11
1.2	Delimitations.....	11
1.3	Disposition of the Study.....	12
<b>2</b>	<b>Theoretical Framework.....</b>	<b>13</b>
2.1	Method of Constructing the Theoretical Framework .....	13
2.2	Terminologies in Digital Transformation .....	14
2.2.1	<i>Digital Transformation</i> .....	15
2.2.2	<i>Digitalisation</i> .....	16
2.2.3	<i>Digitisation</i> .....	17
2.2.4	<i>Digital Technologies</i> .....	17
2.3	Strategic Perspectives .....	19
2.3.1	<i>From Corporate Strategy to Business Strategy</i> .....	19
2.3.2	<i>Digital Strategy</i> .....	20
2.3.3	<i>Strategic Alignment</i> .....	20
2.4	Digital Investments .....	21
2.4.1	<i>Investments in Digital Technologies</i> .....	22
2.4.2	<i>Investments and Digital Maturity</i> .....	22
2.5	Facilitating Digital Transformation.....	23
2.5.1	<i>Characteristics of Digital Leaders</i> .....	23
2.5.2	<i>Digital Leaders at Organisational Levels</i> .....	24
2.6	Risks and Challenges .....	25
2.6.1	<i>Risks and Challenges Associated with Investment Initiatives</i> .....	25
2.6.2	<i>Risks and Challenges Associated with Organisational Characteristics</i> .....	26
2.6.3	<i>Risks and Challenges Associated with Leadership</i> .....	26
2.7	The Current State of the Literature .....	26
<b>3</b>	<b>Methodology .....</b>	<b>28</b>
3.1	Research Context .....	28
3.2	Research Philosophy .....	29
3.3	Research Approach .....	30
3.4	Research Strategy and Research Design .....	30
3.5	Data Collection.....	31

3.5.1	<i>Sampling Procedure and Participants</i> .....	32
3.5.2	<i>Process of the Interviews</i> .....	36
3.6	Method of Data Analysis.....	37
3.7	Research Quality and Ethical Considerations .....	38
<b>4</b>	<b>Empirical Findings</b> .....	<b>41</b>
4.1	Strategic Perspectives .....	42
4.1.1	<i>Developing the Strategies according to Changes in Business Needs</i> .....	42
4.1.2	<i>Long-term Aims of Value Creation</i> .....	42
4.1.3	<i>Diffusing and Communicating the Corporate Strategy across the Organisation</i> .....	44
4.2	Advancements in Digitalisation .....	45
4.2.1	<i>Status Quo of Digitalisation</i> .....	45
4.2.2	<i>Future Efforts of Digitalisation</i> .....	46
4.3	Digital Investment Behaviour .....	48
4.3.1	<i>Building a Business Case to Decide on Investments</i> .....	48
4.3.2	<i>Decisions Based on Digital Growth and Capability Building</i> .....	49
4.3.3	<i>Mixed Approaches of Making Investment Decisions</i> .....	50
4.3.4	<i>Types of Investments in Digital Tools and Technologies</i> .....	51
4.3.5	<i>Implementation Process of the Investment</i> .....	52
4.4	Influence of MNE-specific Factors .....	53
4.4.1	<i>Characteristics of MNEs</i> .....	53
4.4.2	<i>Changes in Operations</i> .....	54
4.5	Synthesis of the Empirical Findings.....	55
<b>5</b>	<b>Analysis</b> .....	<b>57</b>
5.1	Strategic Perspectives .....	57
5.1.1	<i>Developing the Strategies according to Changes in Business Needs</i> .....	57
5.1.2	<i>Long-term Aims of Value Creation</i> .....	57
5.1.3	<i>Diffusing and Communicating the Corporate Strategy across the Organisation</i> .....	59
5.2	Advancements in Digitalisation .....	59
5.2.1	<i>Status Quo of Digitalisation</i> .....	60
5.2.2	<i>Future Efforts of Digitalisation</i> .....	61
5.3	Digital Investment Behaviour .....	61
5.3.1	<i>Building a Business Case to Decide on Investments</i> .....	62
5.3.2	<i>Decisions Based on Digital Growth and Capability Building</i> .....	62
5.3.3	<i>Mixed Approaches of Making Investment Decisions</i> .....	63
5.3.4	<i>Types of Investments in Digital Tools and Technologies</i> .....	64
5.3.5	<i>Implementation Process of the Investment</i> .....	64
5.4	Influence of MNE-specific Factors .....	65

5.4.1	<i>Characteristics of MNEs</i> .....	65
5.4.2	<i>Changes in Operations</i> .....	66
5.5	Synthesis of the Analysis.....	66
<b>6</b>	<b>Conclusion</b> .....	<b>69</b>
6.1	Answering the Research Question.....	69
6.2	Theoretical and Managerial Implications of the Study .....	70
6.3	Limitations .....	71
6.4	Direction for Further Research .....	72
	<b>References</b> .....	<b>73</b>
	<b>Appendix A - Interview Guide</b> .....	<b>80</b>

## List of Abbreviation

<b>Abbreviation</b>	<b>Term</b>
AI	Artificial Intelligence
B2B	Business-to-Business
CDO	Chief Digital Officer
CIO	Chief Information Officer
DT	Digital Transformation
IT	Information Technologies
MNE	Multinational Enterprise
R	Respondent
R&D	Research and Development
R&T	Research and Technology
RODI	Return On Digital Investments
ROI	Return On Investments

## List of Figures

Figure 1: Disposition of the Study .....	12
Figure 2: The three Digital Domains.....	15
Figure 3: Relationship between Strategic Perspectives .....	21
Figure 4: Established Theoretical Framework.....	27
Figure 5: Data Structure .....	41
Figure 6: Relationship between the Aggregate Dimensions.....	56
Figure 7: Framework Facilitating Digital Investment Behaviour.....	67

## List of Tables

Table 1: Inclusion and Exclusion Criteria of the Selected Literature .....	14
Table 2: List of Interviewees.....	35



# 1 Introduction

In today's turbulent times guided by technological advancements and data-driven disruptions, organisations need sustainable adaptation and development strategies in all parts of their businesses to stay competitive. The continuous emergence of technologies, such as artificial intelligence (AI), and processes enabled by these technologies present new changes (Ritter & Pedersen, 2020). One area with great potential to facilitate a shift towards a sustainable economy while simultaneously strengthening competitiveness stems from the fourth industrial revolution and requires organisations to digitally transform (Magnusson et al., 2022). Digital transformation (DT) describes the processes that combine digital technologies with business models to facilitate value creation for organisations (Lee et al., 2021). With respect to this study, DT is defined as *“a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies”* (Vial, 2019, p. 121). However, there is a lack of comprehensive understanding of the DT phenomenon by practitioners (Lee et al., 2021). Rather than simply implementing new digital technologies and thereby creating more silos and fragmentation, the focus should be on bringing about organisational transformation through a strategic adoption of digital technologies. Therefore, DT promotes and enhances sustainable competitiveness when successfully integrated into a company (Lee et al., 2021). DT entails the domains of digitalisation and digitisation which themselves include various concerns but also opportunities regarding the digital journey of an organisation (Blumquist et al., 2020). For this study, digitalisation is defined as *facilitating the integration of digital technologies into business processes, systems, and activities to enhance efficiency, productivity, and quality* (Blumquist et al., 2020). Furthermore, digitisation is acknowledged as *the process entailing the conversion of analogue information, signals, or data into a digital representation* (Saarikko et al., 2020).

Sustainable competitive advantages can be gained from digital capabilities that define opportunities for digitalisation (Joppen et al., 2019; Ritter & Pedersen, 2020). The design of unique, innovative value solutions facilitates organisations to integrate their resources and requirements (Bican & Brem, 2020), and strengthen their business models (Smith et al., 2016; Ritter & Pedersen, 2020). Nevertheless, DT is cumbersome (Magnusson et al., 2022) and adopting a strategy that is unrelated to technological considerations introduces unnecessary risk (Bican & Brem, 2020; Duraivelu, 2022). It is common to see a gap between technology and strategy when a company develops a corporate strategy without realising the full potential of available technologies (Bican & Brem, 2020; Duraivelu, 2022) with the ultimate risk of resisting DT (Magnusson et al., 2022). Systematic knowledge is required to secure a successful future, but many industries lack this today, thus, organisations only reach some level of digitisation while DT largely remains in the stage of infancy (Schallmo et al., 2017; Lee et al., 2019). Therefore, DT is recognised to play a key role in disrupting industries in the future and will impact strategies, ways of innovating, and business models (Duraivelu, 2022).

One of the industries that are affected is the industrial goods sector which is defined as manufacturing and producing machinery or processes for the processing of other goods (Johnston, 2021). The industrial goods sector is well-established with many incumbents being large multinational enterprises (MNEs) founded in the mid-1800s. Even though these MNEs

have demonstrated increased levels of development when facing external changes, such as globalisation and sustainable development, their legacy and heritage can be a hindrance (Buenstorf, 2016). Their establishment more than 100 years ago can be seen as a limitation for the MNEs to adapt DT due to a “business as usual” mindset. Reportedly, many of these enterprises adopt digital technologies in some way but fail to recognise and exploit their full potential (Westerman et al., 2011; OECD, 2020). Thus, MNEs in the industrial goods sector face numerous challenges in maintaining a sustainable competitive advantage given the uncertain external environment caused by factors such as the accelerated speed of technological change (Warner & Wäger, 2019; Burger et al., 2021). DT, including digitalisation and digitisation, plays a critical role in enabling MNEs to respond to these challenges and be at the forefront of their industry. Among other benefits, MNEs can leverage DT to improve their operations, create new business models, and enhance their value propositions (Magnusson et al., 2022).

Today, the industrial goods sector is at the end of its current life cycle and radical change is necessary (Esmaeilian et al., 2016; Duraivelu, 2022). DT paves the way for new technologies and more data-driven business models with digitalisation as a key lever in the field of technology, operations, and business models. Therefore, MNEs must make investments that are not only aligned with their internal strategies but also with the changes imposed by DT (Duraivelu, 2022) as investments in digital technologies are the origin of DT (Hu et al., 2023). The intention of investments in research and development (R&D), tools, and technologies is to support the organisation’s activities, objectives, and goals for aligning the business and digital strategy (Byrd et al., 2006) since tremendous value can be gained from them (Westerman et al., 2011). Companies have accelerated their spending on digital solutions (Wang et al., 2022) as DT does not happen without investments (Westerman et al., 2011).

These investment decisions are primarily facilitated by dedicated employees to support their organisations in deciding, planning, and guiding future digital initiatives (Bedenik, 2015; Vial, 2019; Mekonnen, 2022). For the purpose of this study, these individuals are defined as *digital leaders*. They are characterised by developing a clear digital strategy, investing in digital initiatives that make the transformative vision become reality (Westerman et al., 2011; Kane et al., 2015; Zoppelletto et al., 2023), and aligning these investments along a strategic direction by building foundational capabilities (Wang et al., 2022). These digital leaders can be found in different hierarchical levels in an organisation as the drivers of DT can be a combination of top-level executives, digital strategists, and managers (Westerman et al., 2011; Zoppelletto et al., 2023) sharing the characteristic of leading a team of employees. Today, digital leaders’ facilitation of investments is vital for maintaining the MNEs’ market position as operations cannot linger in their development and traditional forms of conducting business must be challenged to stay competitive (Burger et al., 2021). Therefore, changes are necessary to be made within historic and complex MNEs (Esmaeilian et al., 2016; Burger et al., 2021).

Most of the existing literature on the topics of DT, strategies, digital investments, and digital leaders covers multiple aspects but a study combining all these concepts has not yet been carried out. Additionally, current research falls short of explaining how exactly investments in digital tools and technologies support MNEs’ corporate and business strategies, how the digital

investment behaviour in this context appears, and how it is aligned throughout the whole organisation. Thus, no studies to date integrate all aspects of DT within the Nordic industrial goods sector, MNEs' investment behaviour in digital technologies, and the role of digital leaders in this process. Therefore, this research advances the literature into deeper dimensions by reinforcing these concepts through novel conclusions of digital leaders' facilitation of MNEs' digital investment behaviour and actions taken to align these with strategic ambitions. Moreover, it highlights digital leaders' role in driving digital initiatives and their ultimate decision-making processes of investments in digital tools and technologies.

### 1.1 Research Purpose and Research Question

The purpose of this study is to investigate how investment decisions in digital technologies are facilitated by digital leaders to align their MNEs' strategies in their DT journey. In addition, the aim is to explore digital advancements in MNEs and the specific investments that promote digitalisation. The focus is on digital leaders in Nordic business-to-business (B2B) MNEs producing industrial goods. With respect to the introduction, the research question sought to answer is:

*How do digital leaders facilitate MNEs' digital investment behaviour to advance in the digital transformation journey while aligning with the corporate strategy?*

### 1.2 Delimitations

One of this study's delimitations to narrow its scope is to focus on digitalisation within DT rather than the transformation process or digitisation. The reason for this is that, while DT incorporates both digitalisation and digitisation, digitalisation has a profound impact on many organisational aspects such as information technologies (IT), strategies, business models, products and services, operational processes, and organisational structures (Parviainen et al., 2017; Joppen et al., 2019). Digitisation creates a foundation for digitalisation by making information available in digital form, and DT can be seen as an umbrella concept that includes both digitalisation and digitisation. Thus, digitalisation is the focal point to date because it presents fundamental changes to businesses (Parviainen et al., 2017; Saarikko et al., 2020; Bican & Brem, 2021; Jedynek et al., 2021). Hence, the study's focus remains at the level of digitalisation, meaning the integration of digital technologies into the business as it is in line with the research's objective of explaining why a particular process or organisation needs technology (Parviainen et al., 2017; Saarikko et al., 2020).

Another delimitation to narrow the scope is to focus on investments made in digital technologies and not skills or competencies. The research acknowledges that investing in the right technology, workforce, and skills is equally important. A lack of skills or competencies within the workforce can be seen as a challenge in the organisation's DT journey (Geissbauer et al., 2016). Even so, this study is focused on the specific investments made in digital technologies, tools, and solutions as the real value of DT comes from the continuous re-envisioning of how digital technologies can extend digital capabilities to gain further benefits (Westerman et al., 2011). Thus, the initial investment in the technology is essential as it becomes the foundation for additional capabilities to be built upon if the organisation keeps

envisioning advancements of its digitally enhanced foundation (Westerman et al., 2011). Therefore, this study recognises the importance of investing in the workforce's skills as an important driver of DT by discussing it in the theoretical framework but will not primarily focus on it during the data collection process.

A final delimitation regards the funding of digital investments. This study recognises the funding and financing of investments in general by mentioning the practices of allocating budgets and budget pools, but the research will not undertake an in-depth examination of that aspect. The reason for this is to narrow the scope by addressing the concept of funding investments, but not discuss it in detail. Still, this research notices the importance of financing digital investments as these require large amounts of capital (Abareshi, 2011; Liu et al., 2023). Thus, companies need to ensure that these will pay off (Hess et al., 2016). Therefore, this study will keep its focus on justifying the return of these investments and the value they can create.

### 1.3 Disposition of the Study

The structure of this study is divided into six main chapters as presented in Figure 1. Firstly, the introduction of the research topic is presented including a discussion of the research problem that later defines the research purpose and question and addresses the delimitations of the study. The introduction is followed by the establishment of a theoretical framework describing and summarising current literature regarding the chosen research topic. Subsequently, the methodological choices made for this research are presented by a thorough representation of the research context, philosophy, strategy, design, and data collection as well as a description of how the collected data was analysed and an acknowledgement of the research's quality and ethical considerations. Afterwards, the empirical findings demonstrate the collected data from the conducted interviews, followed by the analysis of the empirical findings in relation to the theoretical framework. Finally, the conclusion chapter provides the answers to the research question, managerial and theoretical implications, and ends with an elaboration on the study's limitations and direction for future research.

*Figure 1: Disposition of the Study*



## 2 Theoretical Framework

---

*The theoretical framework begins by explaining the methods used to construct the framework and derive relevant literature, followed by a detailed review of the current literature regarding the research topic. Subsequently, the framework presents identified gaps in the current body of literature through a discussion of the current state of the literature.*

---

### 2.1 Method of Constructing the Theoretical Framework

This research applied a transparent integrative literature review to construct the theoretical framework. An integrative review follows the process of reviewing and synthesising representative literature concerning the research topic in an integrative manner to develop new perspectives and frameworks (Cho, 2022). This type of review summarises previous research, integrates existing literature by discussing similarities and differences, and evaluates the current body of literature by drawing overall conclusions on the topic. The search for relevant literature about the research topic was conducted by using the databases of Business Source Premier, Emerald Insights, JSTOR, Elsevier, Science Direct, Scopus, MDPI, Taylor & Francis, and Google Scholar. To ensure the trustworthiness of the selected literature, all the selected journals are peer-reviewed, and their impact factors were considered. Literature that is not published articles in journals, meaning books and grey literature, mainly conference and industry reports from consultancy companies such as Deloitte, PWC, and Capgemini, was included as the conclusions in these are consistent with the selected published articles, thus, confirming their trustworthiness.

The search for relevant literature started by using broad keywords such as “digital transformation”, “digitalisation”, “digital strategy”, and “investments”. These words yielded extensive results; hence, the search words were narrowed down by the combination and specificity of words. These included search words such as “digital transformation AND multinational enterprises”, “digital transformation AND strategy AND industrial goods”, and “digitalization OR digitalisation OR digitization OR digitisation OR digital transformation AND strategy AND investment decisions”. Thus, throughout this process, literature about the topics of DT, investments in digital technologies, and the alignment of strategies for digitalisation were found. Still, it could be concluded that relatively little literature exists today about enterprises’ investment behaviour in digital technologies, and almost no research has been conducted on this topic in the context of the industrial goods sector in the Nordic region. In addition, the existing literature does not cover the combination of digital leaders’ role in digital investments and the alignment of enterprises’ strategies.

Moreover, the search was conducted by both researchers separately to cover as much literature and databases as possible, and to increase the framework’s accuracy. Once the yielded literature was gathered, the articles’ abstracts were read to find relevant research that addresses this study’s objective. Thereafter, the published articles and books that were deemed appropriate and relevant for this research were gathered, thoroughly read, and jointly discussed in an in-depth manner to ensure their contribution and applicability for the research purpose. Once read, more relevant articles were found through some articles’ reference lists. Finally, the researchers

applied inclusion and exclusion criteria for selecting the literature to further increase the accuracy and relevancy of the theoretical framework.

The included literature either partially or fully addresses this study’s topics of investments in digital tools and technologies, strategy alignment, and facilitating digitalisation. Moreover, some of the selected literature addresses the industrial goods sector within the manufacturing industry, MNEs in terms of firm size, and business process management. Furthermore, all the included papers are linked to the topics of digitalisation and DT. Notwithstanding the included literature, the excluded ones did not give assurance about the trustworthiness or quality of the research and were therefore deemed as not reliable sources of information. The excluded literature’s context was not relevant or out of scope for this study by focusing on topics such as the national economy rather than the enterprises’ business, industries other than industrial goods, and small and medium-sized enterprises rather than MNEs. Still, some of the excluded literature included one or more relevant topics, but their objective was on an unrelated topic, such as risk management. All the criteria are summarised in Table 1.

Table 1: Inclusion and Exclusion Criteria of the Selected Literature

Inclusion Criteria	Exclusion Criteria
Partially or fully addresses one or more of the research’s objectives	Questionable trustworthiness or low quality resulting in low reliability
Includes at least one of the research’s topics	Not addressing the research objective by being irrelevant or out of scope
Links to digitalisation and DT	Focus on digitalisation in terms of the national economy and risk management

Eventually, 53 studies were regarded as relevant for this research to constitute the theoretical framework. The framework is structured by first discussing definitions related to DT, followed by strategic perspectives within organisations and DT, organisations’ investment behaviour regarding digital technologies, facilitators of digitalisation in organisations, and associated risks and challenges within DT.

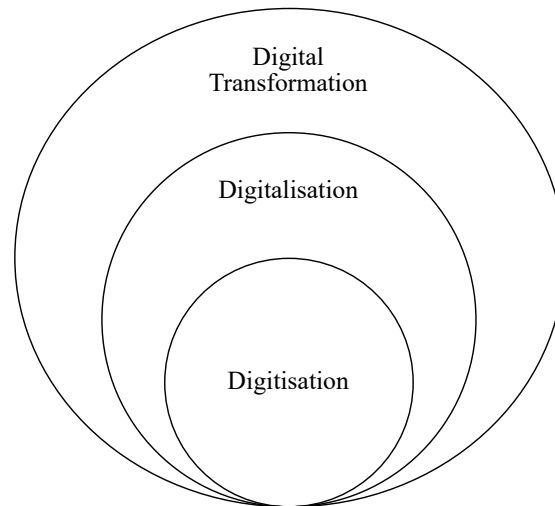
## 2.2 Terminologies in Digital Transformation

Although the terms *digitisation*, *digitalisation*, and *digital transformation* are sometimes used interchangeably, they refer to distinct ideas or different *digital domains* (Fischer et al., 2020; Saarikko et al., 2020). They are related to each other in that they are all interdependent and utilise *digital technologies* to contribute to the overall *digital journey* of an organisation.

While *digitisation* creates the foundation for *digitalisation* by making information available in digital form, *digitalisation* leverages the benefits of that previously built foundation to create value through the integration of digital technologies into business processes, systems, and

ultimately a digital infrastructure (Saarikko et al., 2020). Consequently, as shown in Figure 2, *digital transformation* constitutes an umbrella concept that includes both *digitalisation* and *digitisation* as essential components for organisational success. The following section gives an account of *digital technologies* and distinguishes the three *digital domains* to provide working definitions and establish a contextual understanding for this study.

Figure 2: The three Digital Domains



Source: Saarikko et al., 2020.

### 2.2.1 Digital Transformation

DT alters industries and societies worldwide (Schneider & Kokshagina, 2017; Brown & Brown, 2019; Vial, 2019; Bican & Brem, 2020; Fischer et al., 2020; Jedynak et al., 2021). Therefore, it is a critical factor to maximise the value of digital assets and to enable significant business improvements related to customer experiences, operations, and business models (Parviainen et al., 2017; Brown & Brown, 2019; Vial, 2019; Albukhitan, 2020; Bican & Brem, 2020; Fischer et al., 2020; Singh et al., 2020). This view is supported by Vial (2019) as well as Singh et al. (2020) who state that DT refers to a process in which digital technologies are crucial to both the genesis and the reinforcement of disruptions that occur at societal and industrial levels, prompting corporations to take strategic action. DT as a complex phenomenon changes the ways of working, roles, and value propositions within organisations and their operating environments throughout an ongoing journey of adapting and streamlining ever-changing demands (Parviainen et al., 2017; Saarikko et al., 2020).

In turn, DT can enhance internal company activities regarding digitalisation and digitisation. If embraced consequently, DT helps improve organisations by significantly changing the combinations of properties, assets, information, computing, communication, and connectivity technologies (Vial, 2019). It thus holds the potential to push innovation efforts beyond the boundaries of individual firms into supply chains and external networks (Vial, 2019; Albukhitan, 2020; Saarikko et al., 2020). Bican and Brem (2020) emphasise that DT is not just the outcome of facilitating digital technologies, digital business models, and digital innovation,

but it is also influenced by the organisation, its digital preparedness, and external collaborations, urging companies from previously unrelated industries to collaborate.

DT leverages digital technologies by strategically combining information with computer, communication, and connection tools to transform organisations and causes transformations in their characteristics (Tekic & Koroteev, 2019; Vial, 2019; Bican & Brem, 2020; Singh et al., 2020; Jedynak et al., 2021). Fundamental changes arise to accelerate the development of the aforementioned aspects to fully utilise the opportunities digital technologies offer in influencing societies in a strategic and prioritised manner (Singh et al., 2020; Bican & Brem, 2021). Thus, it should be enacted by firms to maintain and enhance their competitiveness (Vial, 2019; Saarikko et al., 2020). However, DT extends beyond the mere process level and has a significant impact on every aspect of business, thus, affecting all stakeholders (Bican & Brem, 2020). Parviainen et al. (2017) assert that a successful DT journey includes changes at all levels of processes, organisations, business domains, and societies.

It can correctly be derived that DT journeys, therefore, require holistic approaches. Multiple dimensions must be addressed at once to accommodate for improved, expanded, or new value propositions (Brown & Brown, 2019; Vial, 2019; Albukhitan, 2020; Fischer et al., 2020; Saarikko et al., 2020; Bican & Brem, 2021; Jedynak et al., 2021). It is equally crucial that employees in digitally maturing organisations have access to the tools and support they need to advance their knowledge and abilities (Fitzgerald et al., 2013; Kane et al., 2015; Singh et al., 2020).

It can be concluded that during their DT journey, organisations are frequently forced to make long-term strategic decisions about the unpredictable future and paradigm-shifting technologies. This is accompanied by identifying relevant technologies and their potential impact on business offerings, as well as their substantial integration into the business (Tekic & Koroteev, 2019; Saarikko et al., 2020).

### 2.2.2 Digitalisation

Digitalisation presents fundamental changes to businesses through the application of digital technologies (Parviainen et al., 2017; Bican & Brem, 2021; Jedynak et al., 2021; Saarikko et al., 2020). Digitalisation refers to the process of integrating digital technologies into different business processes, systems, and activities to improve efficiency, productivity, and quality (Blumquist et al., 2020). In addition, it presents one way for organisations to face increasing market challenges in an organised manner (Parviainen et al., 2017; Joppen et al., 2019; Bican & Brem, 2021). Digitalisation also explains why a particular process or organisation needs digital technologies (Parviainen et al., 2017; Saarikko et al., 2020). Changing existing products or services into their respective digital variants offers potential throughout value and supply chains, competitive advantages, and thereby growth opportunities to organisations (Parviainen et al., 2017; Butt, 2020).

Digitalisation has a profound impact on many aspects such as IT, strategies, business models, products and services, operational processes, culture, and organisational structures (Parviainen et al., 2017; Joppen et al., 2019). Therefore, it allows for seamless integration, enhanced efficiency, and effectiveness (Butt, 2020; Jedynak et al., 2021), increased delivery of



workflows, and value creation (Brown & Brown, 2019). As a means to enhance connectivity, digitalisation efforts alter communication and interaction patterns between stakeholders and, thus, hold the potential to reshape economic, social, and political environments (Parviainen et al., 2017; Fischer et al., 2020).

The primary objective of digitalisation is to explore new opportunities to find and connect new resources as well as enrich existing ones to reduce costs (Fitzgerald et al., 2013; Butt, 2020; Singh et al., 2020). Current resources and processes can be exploited by applying new technologies to solve discrete business problems (Tekic & Koroteev, 2019). Internal efficiency gains from digitalisation include increased process efficiency, quality, and consistency by removing manual stages and attaining more precision (Parviainen et al., 2017). Compliance is increased by record standardisation and recovery through quicker back-ups and storage distribution. As a fundamental enabler for improving internal organisational efficiency and delivering external opportunities such as new services or offerings to customers, digitalisation can produce disruptive changes in organisations' business environments (Parviainen et al., 2017; Butt, 2020).

It can be concluded that digitalisation represents the socio-technical process of leveraging digitised products or systems required to develop new business processes, business models, or value propositions. As a result, this answers why digitisation as well as the application and utilisation of digital technologies are relevant to an organisation (Saarikko et al., 2020).

### 2.2.3 Digitisation

Digitisation, as a component of both digitalisation and DT (Saarikko et al., 2020), describes technology or a system of technologies that convert analogue information, signals, or data into a digital representation (Parviainen et al., 2017; Fischer et al., 2020; Saarikko et al., 2020; Bican & Brem, 2021). It alters components to allow for new interactions and connections with other features in the environment, facilitating DT processes (Tekic & Koroteev, 2019). As a necessary precondition for everything from smartphones to AI, digitisation allows for the decoupling of form, function, and access to encompass how physical activities are captured and converted into their virtual representation (Fischer et al., 2020; Saarikko et al., 2020).

As digitisation has increased access to information and opened new avenues for communication, it has resulted in the establishment of the digitalisation paradigm, which has made IT critical for competitiveness and consumer satisfaction. As a result, organisations increasingly rely on integrating their structures, operations, and objectives with IT to achieve a variety of benefits, including cost savings, improved performance, and higher product and service quality (Fischer et al., 2020; Saarikko et al., 2020).

### 2.2.4 Digital Technologies

The European Commission distinguishes four main digital technologies of mobile, social media, cloud, and data analytics (European Commission, 2018), which enterprises can use to improve their business operations, re-design business models, and increase stakeholder engagement (Brown & Brown, 2019; Vial, 2019; Bican & Brem, 2020; Liu et al., 2023). Within organisations, this new paradigm offers tremendous opportunities for creativity and success while affecting people, businesses, and society at large. However, digital technologies alone

add no value to a company. It is their incorporation and application within a given context that allows an organisation to discover new methods of creating value, which is consistent with the long-held belief that organisational change is an emergent process (Vial, 2019).

Digital technologies are based on electronic data acquisition, processing, or analysis (Bican & Brem, 2020) and facilitate the connection of people, things, and locations (Fischer et al., 2020). Hence, they enable new forms of automation and decision-making processes (Vial, 2019) as well as the development of novel goods and services (Brown & Brown, 2020). They embody a multitude of tools, infrastructure, and artefacts with digitised components, applications, or media content which can be enabled by information and communication technologies, or communication networks such as big data analytics, AI, and machine learning (Liu et al., 2023), and the combination of other technologies with relevancy to organisations' DT journeys (Vial, 2019).

As enablers, digital technologies must be acknowledged as a means to achieve strategic progress through enhanced repeatability and scalability (Kane et al., 2015; Kiron et al., 2016; Tekic & Koroteev, 2019) where, in most cases, they do not displace or replace existing components. Rather, they improve, digitise, and transform them into data sources to enable novel recombination (Tekic & Koroteev, 2019). Because organisations can use digital technologies to augment physical products with novel services to simultaneously serve their customers and gather data, new value propositions emerge (Kiron et al., 2016; Vial, 2019). In that sense, digital technologies can help firms adapt quickly to changes in environmental conditions by contributing to organisational agility (Kiron et al., 2016). In addition, digital technologies form the basis for innovation as well as the development of new value-creating environments and involve all stakeholders through their adoption along the value chain (Bican & Brem, 2020). Organisational change seems inevitable due to the major transformational undertakings (Parviainen et al., 2017; Vial, 2019; Bican & Brem, 2020) and new types of collaboration among scattered networks can be facilitated (Vial, 2019).

Most research agrees that digital technologies tend to be inherently disruptive (Tekic & Koroteev, 2019; Vial, 2019; Brown & Brown, 2020). According to a survey by Kane et al. (2015), 76% of interviewed executives in organisations around the world found digital technologies to be crucial to their enterprise, and 76% believed that digital technologies will disrupt their industry soon. Therefore, they can be considered core tools of DT, both individually as well as synergistically (Tekic & Koroteev, 2019). Contrasting that view, Saarikko et al. (2020) note that whether digital technologies are transformative or disruptive depends on the organisation's ability to exploit their potential. Only if organisations come to thoroughly understand digital technologies and their relevancy to their circumstances can they serve to enhance operational efficiency, business model innovation, and structural transformation (Buenstorf, 2016; Hess et al., 2016).

Concludingly, it can be said that the three digital domains of DT, digitalisation, and digitisation are interdependent concepts and cannot easily be separated from one another. Digitisation facilitates digitalisation through exploring and integrating digital technologies. That in turn, ultimately shapes the foundation for DT.

## 2.3 Strategic Perspectives

Strategy is the link between the firm and its external environment (Mintzberg & Lampel, 1999; Grant, 2019). It plays an important role in aiding an organisation's effective management by enhancing decision-making, facilitating collaboration, and focusing on long-term goals (Grant, 2019). Effective strategies are characterised by functionality and individual decisions that are aligned with one another to generate a coherent strategic position and path of development (Porter, 1980; Grant, 2019).

### 2.3.1 From Corporate Strategy to Business Strategy

While *corporate strategy* is concerned with where a firm competes in an external environment, *business strategy* regards how an organisation competes within a particular market. There is no clear distinction between corporate strategy and business strategy: it is determined by where the lines between sectors and marketplaces are drawn (Gadde et al., 2003; Grant, 2019).

Corporate strategy determines the overall direction and objectives of the organisation. This considers various business units, products, and markets to formulate a strategy that aligns with the company's vision and mission. Top-level executives play a key role in developing and revising the corporate strategy by engaging in high-level, long-term planning that involves resource allocation and decisions about the organisational structure (Smith et al., 2016; Grant, 2019; Hill et al., 2019). Scholarly literature has emphasised the importance of strategic consistency in corporate strategy development. Hambrick and Fredrickson (2005) as well as Grant (2019) posit that companies that maintain consistency in their strategies over time are more likely to achieve superior performance than those that frequently change their strategies. However, this does not mean strictly adhering to the set boundaries, but rather tolerating uncertainty and embracing multiple perspectives and ambitions to achieve the organisation's mission (Smith et al., 2016). In addition, it is suggested to balance the exploitation of existing capabilities and recourses with the exploration of new opportunities, which is a crucial success factor in today's rapidly changing business environments (Burgelman et al., 2004; O'Reilly & Tushman, 2004; Smith et al., 2016). Studies underscore the significance of developing a well-designed corporate strategy that considers both the internal capabilities of the company and the external environment in which it operates (Christensen & Bower, 1996; Dunning & Lundan, 2008; Smith et al., 2016). Thus, executives are stressed to make strategic decisions that consider the long-term objectives of their organisation while balancing the need to remain competitive in their respective ecosystem.

The breakdown of the corporate strategy within an organisation into actionable parts is referred to as business strategy (Dunning & Lundan, 2008). Business strategy guides the specific actions and plans taken by the individual business units or departments of an organisation to contribute to the corporate strategy. As mentioned before, business strategy is concerned with how a firm competes and hence, involves decision-making about market positioning, generating competitive advantages, product development, and pricing strategies which are developed on levels below the top management and focus on the short- to medium-term (Teece, 2010; Grant, 2019; Teece & Petricevic, 2020). The literature on strategic management highlights the importance of resources and capabilities in gaining a competitive advantage (Smith et al., 2016). Barney (1991) and Christensen and Bower (1996) both assert that organisations with

distinctive and valuable resources have a better chance of establishing long-term competitive advantages. Furthermore, Teece (2010) emphasises the importance of dynamic capabilities, which refer to a company's ability to adapt its resources and skills to changing market conditions and consumer needs (Dunning & Lundan, 2008; Smith et al., 2016). In this approach, dynamic capabilities help businesses to maintain their competitive advantage over time.

It can be concluded that both well-defined corporate and business strategies are essential to achieving an organisation's long-term vision. Additionally, their respective development and adjustment lie within multiple levels of the firm and require continuous communication and alignment.

### 2.3.2 Digital Strategy

When discussing DT in the literature, there is a consensus around the need for a clear and well-defined digital strategy (Schwertner, 2017; Tekic & Koroteev, 2019; Albukhitan, 2020; Magnusson et al., 2022) to drive DT (Tekic & Koroteev, 2019; Saarikko et al., 2020). This is because it defines the way digital technologies will be applied (Schwertner, 2017; Brown & Brown, 2019; Albukhitan, 2020).

According to the literature, a firm's *digital strategy* contains a *digital business strategy* and a *DT strategy* (Brown & Brown, 2019; Tekic & Koroteev, 2019). While digital business strategy aims at creating business value by utilising and leveraging digital technologies, DT strategy concerns integrating and exploiting digital technologies towards the creation of capabilities and responding to environmental changes (Schwertner, 2017; Brown & Brown, 2019; Albukhitan, 2020). Thus, it can be said that the DT strategy furthers the digital business strategy by attending to the business governance and direction of the process (Brown & Brown, 2019).

The purpose of a digital strategy is to create a clear vision, improve customer experience, innovation, and decision-making (Schwertner, 2017), and ensure an explicit direction to monitor progress (Brown & Brown, 2019). Ultimately, explicit digital strategies cover all aspects of business activity - from R&D and production to quality control, analysis, and delivery (Albukhitan, 2020). Nevertheless, the implementation of the digital strategy is facilitated by supportive management, financial resources, and active participation of all parties (Schwertner, 2017) across all business areas (Brown & Brown, 2019).

### 2.3.3 Strategic Alignment

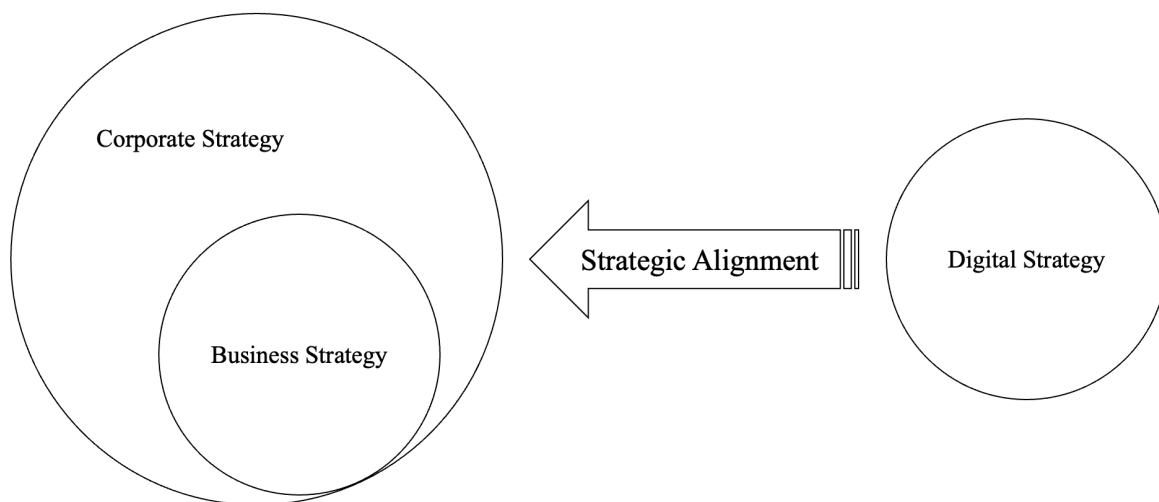
Considering the importance of establishing a well-defined digital strategy, a critical factor in reaping maximum value from digitalisation and leveraging digital technologies is strategic alignment (Kotusev, 2020). Strategic alignment involves developing and maintaining a mutually beneficial relationship between the organisation's strategy and digital strategy (Abareshi, 2011; Butt, 2020). Indeed, strategic alignment is vital for enhancing performance (Byrd et al., 2006; Abareshi, 2011; Smith et al., 2016; Kotusev, 2020) and is seen as a determinant for successful DT (Mekonnen, 2022). It is evident that companies that integrate their digital strategy with their corporate strategy have successfully transformed processes and business models through the application of digital technologies (Kiron et al., 2016) and outperformed those who lack alignment (Abareshi, 2011). Other benefits provided by strategic

alignment are reduced costs, unique capabilities, improved customer satisfaction, higher market share, and product differentiation (Abareshi, 2011).

Moreover, strategic alignment also brings about successful DT with positive outcomes of improved partnership management, enhanced operational efficiency, and emerging value from digital technologies (Mekonnen, 2022). Particularly, investments in digital technologies and reduction of improvident spending are enabled by strategic alignment (Byrd et al., 2006). Closer alignment of digital and business strategies can lead to higher revenues and profits without needing to invest more in digital technologies since strategic alignment lies in substantially leveraging the firm’s digital investments (Byrd et al. 2006). Additionally, failing to align the strategies can also result in wasted resources, lost opportunities, and consequent low performance (Abareshi, 2011; Smith et al., 2016). Conclusively, the more impactful role digitalisation receives in the overall strategy, the more profitable and competitive the organisation will become from the facilitation of strategic alignment (Avison et al., 2004).

Clearly, it must be acknowledged that many theories have been developed around digital strategies to demonstrate the importance of digitalisation for organisations. However, for this research the focus is on the integration of digitalisation into the MNEs’ vision. Therefore, it is important to the study’s purpose to investigate the alignment of the digital strategy with the corporate strategy. As illustrated in Figure 3, though various concepts of digital strategy are discussed in this chapter, the scope is on strategic alignment to reach coherence of the organisation’s digital efforts toward the vision.

Figure 3: Relationship between Strategic Perspectives



## 2.4 Digital Investments

Investments in digital technologies are the origin of DT (Hu et al., 2023). Thus, these investments’ intention is to support the organisation’s activities, objectives, and goals for strategic alignment (Byrd et al., 2006).

#### 2.4.1 Investments in Digital Technologies

Companies have accelerated their spending on digital solutions (Wang et al., 2022) as DT does not happen without investments (Westerman et al., 2011). Even so, Westerman et al. (2011) assert that the real value of DT does not come from the initial investments but from the continuous re-envisioning of how digital technologies can extend capabilities to gain further benefits. Still, the initial investment is essential as it becomes the foundation for the capabilities on which additional investments can be made if the organisation's leaders keep envisioning what else they can do with their digitally enhanced foundation (Westerman et al., 2011) and how these capabilities are applied to successfully use digital technologies (Jardak & Hamad, 2022). The usage and adaptation of digital technologies are highly interrelated and involve connectivity and integration among all stakeholders (Lee et al., 2021). In addition, while investing in the right digital technology is important, success will depend on the development of a robust digital culture with clear leadership that drives organisational change (Abareshi, 2011; Geissbauer et al., 2016). Other essential factors in digital investments are a well-defined digital strategy, successful implementation (Wang et al., 2022), and strategic alignment to guarantee high levels of return on investment (ROI) (Abareshi, 2011).

Notably, the initial investment in digital technologies requires large amounts of capital (Abareshi, 2011; Liu et al., 2023) especially when it involves both software and hardware (Lee et al., 2021), thus, companies need to ensure that these investments will pay off (Hess et al., 2016). Because of the large capital required, organisations might face funding and budgeting issues for their digital investments (Wang et al., 2022). Therefore, they have started to progressively measure returns on digital investments (RODIs) (Wang et al., 2022) to assess the economic viability of these investments (Joppen et al., 2019). In turn, the traditional budgeting process that includes measurable revenue and cost improvements are used to justify a company's investments in digital technologies (Westerman et al., 2011). However, this is a difficult task as organisational adjustments, intangible factors, the investment's expandability, interconnectedness, and extensibility (Joppen et al., 2019) and its associated uncertainty must be considered (Liu et al., 2023). Organisations especially struggle to successfully derive value from these investments when they require organisational changes (Abareshi, 2011). Their value added is not instantaneous because it can take years to materialise and be captured by performance indicators (Jardak & Hamad, 2022). Nevertheless, these types of investments accrue large returns in the long term (Jardak & Hamad, 2022; Liu et al., 2023) and increase organisational performance by building digital capabilities (Jardak & Hamad, 2022).

#### 2.4.2 Investments and Digital Maturity

According to a survey by Kane et al. (2015), about organisational maturity, 26% of interviewed executives in organisations around the world saw themselves in the early phases of digitalisation maturity, 45% considered their company to be progressing, and 29% considered themselves to be mature companies. Indeed, an organisation's investments in digital technologies are associated with its digital maturity (Westerman et al., 2012; Brown & Brown, 2019; Jardak & Hamad, 2022).

Digital maturity is a combination of both the level of investment in technologies that are aimed at changes in organisational operations and business models (Westerman et al., 2012; Jardak

& Hamad, 2022) and the investment level in leadership capabilities necessary to facilitate DT for an organisation (Westerman et al., 2012; Jardak & Hamad, 2022). Companies demonstrating low digital maturity are typically unaware of digital opportunities or have introduced small digital investments with ineffective management in place (Westerman et al., 2012; Brown & Brown, 2019; Jardak & Hamad, 2022). Contrastingly, digitally mature companies truly understand the value of DT, seize new digital opportunities, and possess a transformative vision with adequate investments in technologies. Strong engagement aligns the investments in digital solutions along a common direction, making these companies better at deriving value to eventually lead to higher revenues from existing assets (Westerman et al., 2012). Moreover, digitally mature organisations have effective coordination mechanisms and investment rules that ensure the right direction for their digital efforts (Westerman et al., 2012). Their investment behaviour stands out by combining complementary investments, synchronising them, and exploiting synergies between built digital capabilities (Westerman et al., 2012). Eventually, Wang et al. (2022) assert that a company's digital investment behaviour can be strengthened by (1) setting up a digital capital allocation strategy, (2) investing in digital technologies to establish a foundation, (3) deciding on the mix between building internal capabilities and making inorganic investments to deliver RODI, (4) creating a process to scale digital initiatives, and (5) building a governance model that provides the metrics and performance indicators needed to measure success.

## 2.5 Facilitating Digital Transformation

Organisations maturing in the digital landscape emphasised strong leadership (Kiron et al., 2016; Engesmo & Panteli, 2019; Tekic & Koroteev, 2019). Since organisations that have a clear digital strategy can seize new opportunities emerging from DT, management must drive strategic change to succeed (Singh et al., 2020). To achieve this, leaders of digital initiatives need a transformative vision for the organisation's future growth and recognise the potential value in corporate assets (Chesbrough, 2010; Westerman et al., 2011; Westerman et al., 2012). Thus, it must be ensured that the vision becomes a reality by investing in digital initiatives to transform the organisation.

### 2.5.1 Characteristics of Digital Leaders

Leaders of DT in organisations possess an important role in acknowledging adaptations of digital technologies (Smith et al., 2016; Vial, 2019; Mekonnen, 2022), assisting in the development of a digital mindset in the organisation (Chesbrough, 2010; Vial, 2019), and responding to disruptions from digital trends (Kane et al., 2015; Kiron et al., 2016; Tekic & Koroteev, 2019; Vial, 2019). These *digital leaders* possess certain behavioural characteristics, namely, openness to adaptability and experimentation (Hess et al., 2016; Brown & Brown, 2019; Wang et al., 2022), having and communicating a transformative vision (Abareshi, 2011; Westerman et al., 2011; Westerman et al., 2012; Kiron et al., 2016; Tekic & Koroteev, 2019), being forward thinkers (Chesbrough, 2010; Kiron et al., 2016), and empowering employees (Westerman et al., 2012; Tekic & Koroteev, 2019; Wang et al., 2022). In this sense, the most important capability of digital leaders lies not in their technology expertise (Kane et al., 2015; Kiron et al., 2016; Brown & Brown, 2019), but rather in driving DT initiatives by embracing

the investment and value of digital technologies for the organisation's success (Kane et al., 2015; Brown & Brown, 2019).

Digital leaders distinctively develop a clear digital strategy to drive transformation (Kane et al., 2015; Zoppelletto et al., 2023), invest in initiatives that make the vision become a reality (Chesbrough, 2010; Westerman et al., 2011), implement digital governance for these initiatives (Westerman et al., 2012; Zoppelletto et al., 2023), and ensure a shared understanding between employees (Abareshi, 2011; Westerman et al., 2012). They align investments along a common direction (Westerman et al., 2012; Zoppelletto et al., 2023) by building foundational capabilities and increasingly tracking the performance of digital investments (Wang et al., 2022).

The way they facilitate investments is by identifying the areas where the organisation should excel based on existing capabilities and corporate needs (Chesbrough, 2010; Zoppelletto et al., 2023; Smith et al., 2016), increasing the investments in these areas, and once the capabilities have improved, re-focusing initiatives towards new areas (Westerman et al., 2012). By doing so, the investments in digital technologies match the needs of the organisation (Zoppelletto et al., 2023). Additionally, they create governance mechanisms that increase coordination across digital investments (Westerman et al., 2012; Zoppelletto et al., 2023) and allow for accurate and quick investment decisions (Wang et al., 2022). Hence, it can be said that digital leaders adopt leadership skills (Matt et al., 2015) by envisioning the organisation's digital future and investing in digital initiatives (Westerman et al., 2011) with an emphasis on keeping these skills updated due to emerging technologies (Mekonnen, 2022; Zoppelletto et al., 2023).

#### 2.5.2 Digital Leaders at Organisational Levels

Even though dedicated employees can lead an organisation's digitalisation efforts, executives play an important role in ensuring the success of DT (Byrd et al., 2006; Matt et al., 2015; Brown & Brown, 2019). Large organisations have the required structure and resources to rely on an executive position that supports, leads, and initiates DT, namely the chief digital officer (CDO) (Matt et al., 2015; Brown & Brown, 2019; Engesmo & Panteli, 2019; Vial, 2019; Singh et al., 2020; Zoppelletto et al., 2023). While the role of the chief information officer (CIO) focuses on delivering applications, infrastructures, and projects (Hess et al., 2016), the CDO leads organisation-wide DT initiatives and activities (Engesmo & Panteli, 2019), thus becoming the most recent fast-growing C-suite position (Singh et al., 2020). CDOs and CIOs have different roles and establish new governance processes through coordination in line with the organisation's needs (Zoppelletto et al., 2023). Still, it is important that the CDO and CIO work alongside each other and actively communicate to coordinate their initiatives and strategies (Hess et al., 2016; Engesmo & Panteli, 2019; Singh et al., 2020).

Moreover, large organisations with CDOs have autonomy in decisions and diffuse the DT strategy to individual worker levels for them to understand why a specific digital investment is being made (Zoppelletto et al., 2023). In cases where a CDO has not been appointed, the CIOs' role has been extended to become business strategists and technologists to drive DT (Zoppelletto et al., 2023). In other instances, the drivers of DT in an organisation can be a combination of CDOs, CIOs, digital strategists, IT managers, general managers, (Zoppelletto et al., 2023), or other top-level executives (Westerman et al., 2011). Thus, it can be said that



digital leaders can be found in all hierarchical levels in an organisation (Westerman et al., 2011; Zoppelletto et al., 2023) with the main responsibility of leading a team of employees.

## 2.6 Risks and Challenges

There are many obstacles to a successful DT journey (Parviainen et al., 2017). Both research and practice struggle to provide actionable guidance, methodological support, and theoretical frameworks for organisations (Joppen et al., 2019; Fischer et al., 2020; Jedynak et al., 2021). DT journeys are lengthy to complete and challenge organisational processes that, despite the perceived importance for future competitiveness, largely remain poorly understood (Parviainen et al., 2017; Fischer et al., 2020; Saarikko et al., 2020).

### 2.6.1 Risks and Challenges Associated with Investment Initiatives

Westerman et al. (2011) have identified risks and challenges associated with the three phases of organisations' DT journeys, namely *initiation*, *execution*, and *coordination*. During the *initiation* phase, three factors can hold an organisation back. Firstly, the lack of impetus, particularly within manufacturing firms, creates a fast-follower attitude rather than a first mover or pioneering approach, oftentimes resulting in bureaucratic investment processes which hinder engagement in digitally enabled experiments or business cases.

Secondly, during the *execution* phase, three missing elements can present threats to successfully moving forward with an initiative. Missing skills, especially, analytic-based decision-making, present a bottleneck to many organisations (Westerman et al., 2011; Geissbauer et al., 2016). When transforming an organisation, major cultural issues may stem from operational and structural changes in jobs as well as automation and information empowerment. It further requires work to change the company culture as well as a strong relationship between IT and business to facilitate a successful DT journey (Westerman et al., 2011; Westerman et al., 2012).

Thirdly, *coordination or governance* challenges impact organisations' DT journeys. It is important to establish a transformative vision within the organisation from the top (Westerman et al., 2011; Westerman et al., 2012; Fitzgerald et al., 2013). Otherwise, with an incremental approach to transformation, the result is fewer radical changes with a focus on local optimisation of efficiency. Organisations might feel disturbed in the way they operate (Fitzgerald et al., 2013), thus, oppose opportunities to increase efficiency and effectiveness because DT journeys are about re-thinking operations and business models from new perspectives rather than turning existing processes into digital versions (Fitzgerald et al., 2013; Parviainen et al., 2017). Therefore, organisations that lack a clear vision and strategy are more likely to fail with their initiatives because the focus remains on simply introducing new digital technologies without a holistic assessment of their benefits or larger-scale implementation efforts (Fitzgerald et al., 2013; Kane et al., 2015; Butt, 2020; Saarikko et al., 2020). Considering investments in digital technologies for singular or isolated use, initially positive results in fragmented areas tend to be overestimated for greater value and, hence, more resources might be invested only to recognise the same as a false positive (Westerman et al., 2011; Tekic & Koreteev, 2019).

### 2.6.2 Risks and Challenges Associated with Organisational Characteristics

DT is frequently perceived as a threat to traditional business models and well-established organisational structures and operations (Tekic & Koroteev, 2019; Butt, 2020; Fischer et al., 2020). Therefore, deficient coordination across and between units or processes can hinder progress as well (Westerman et al., 2011; Joppen et al., 2019; Vial, 2019).

Many challenges arise from conflicts between traditional and new businesses or processes which must be addressed through an overarching vision (Westerman et al., 2011, Parviainen et al., 2020). One of these challenges is cultural inertia that promotes familiarity over innovation and risk-taking (Fitzgerald et al., 2014; Geissbauer et al., 2016; Tekic & Koroteev, 2019; Saarikko et al., 2020), suggesting that MNEs hold themselves back with an inherent innovation fatigue (Fitzgerald et al., 2013; Kiron et al., 2016). As a result, digitally mature companies typically show highly collaborative cultures as well as leadership practices driving the transformation and encouraging risk-taking (Brown & Brown, 2019; Parviainen et al., 2020).

### 2.6.3 Risks and Challenges Associated with Leadership

There are risks concerning digital leaders and their organisations as they might have struggles and biases in facilitating DT. Some organisations can be constrained by a lack of talent, lack of resources, or the drive of other priorities (Liu et al., 2023), entailing that leaders must manage digital initiatives that are limited (Kiron et al., 2016). In other cases, leaders might become counterproductive when creating digital initiatives from an entrepreneurial spirit, and invest in more initiatives than organisationally manageable, leading to more difficulties (Tekic & Koroteev, 2019).

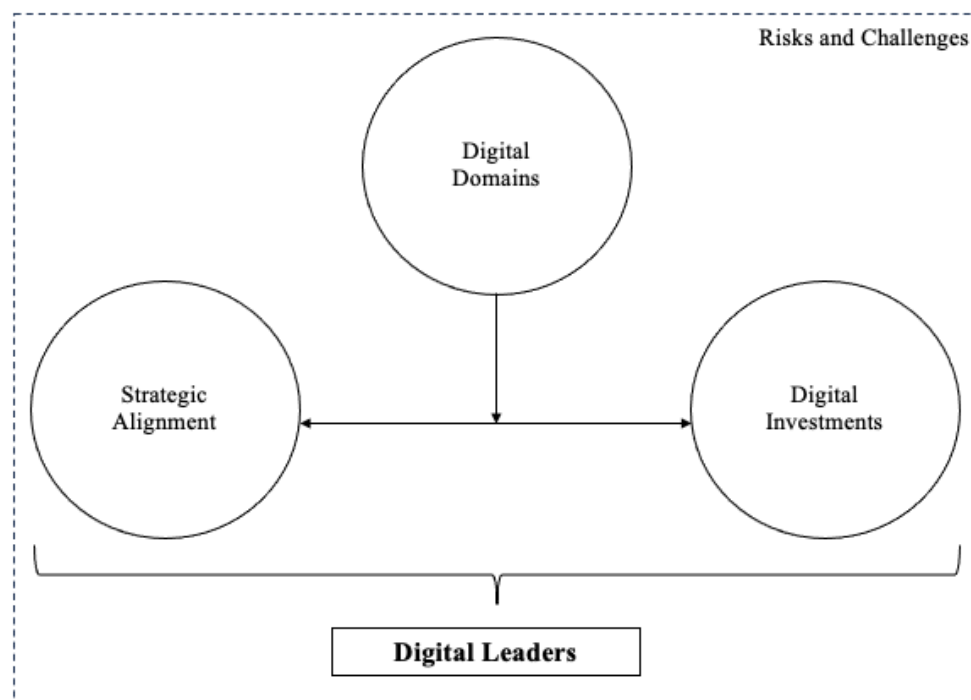
Management can be biased towards the present, meaning that they prefer short-term returns over long-term benefits even if the latter is larger (Liu et al., 2023). This can cause long-term investments to be undervalued, and the importance of digital investments to be ignored (Liu et al., 2023). The aim of DT initiatives should be to combine top-down leadership and bottom-up innovation, but in many organisations, these components can be conservative or too slow and thus, prevent the organisation from investing in its DT journey (Westerman et al., 2012).

## 2.7 The Current State of the Literature

There exists an overall consent between researchers on general definitions within this research topic. It is agreed upon that DT necessitates a change in the use of technology in which new and developing digital solutions are introduced to improve product and service creation and delivery. However, there are differing perspectives on which technologies are relevant. Yet, the introduction of digital technologies and methods is one of the most essential benefits of DT even though researchers disagree about whether DT can be defined as inherently disruptive. Literature concerning strategic alignment is extensive in its field with researchers agreeing upon the need for a clear and well-defined digital strategy. Moreover, the aspects of strategy and strategic alignment are extensively covered, while there is mostly grey literature to be found related to investment behaviour within DT. Research on digital leaders thus far includes their characteristics and behavioural aspects, with the role of CDOs as a newly established and fast-growing aspect of DT.

The theoretical framework has revealed that practitioners are missing frameworks on DT implementation and journeys, particularly within the industrial goods sector. Research today falls short of covering how exactly investments in digital tools and technologies support MNEs' strategies, how the decision-making process of these investments appear, and how it is diffused throughout the whole organisation. Additionally, it is not uncommon that digital leaders at multiple organisational levels drive DT and facilitate digital investments within MNEs as they could be a combination of different organisational roles, with the role of CDOs being a recently popular one. It must further be acknowledged that, based on the presented literature review, no studies to date combine all aspects of DT within the Nordic industrial goods sector, MNEs' investment behaviour regarding digital technologies, and the role of digital leaders in this process, calling for further research. The theoretical framework shown in Figure 4 is established and used throughout this study.

Figure 4: Established Theoretical Framework



Therefore, this study aims to fill the presented gaps by contributing knowledge in understanding the digital journeys of MNEs, the industrial goods sector, and the Nordic region by specifying how investments in digital technologies are facilitated by digital leaders within this context. Additionally, this study aims to thoroughly examine and understand how digital leaders act to align these with strategic ambitions. Doing so in a qualitative manner, this study's findings are aimed at moving existing knowledge within this field into deeper dimensions by the combination of the described topics concerning digitalisation, strategies, and investments in the outlined context.

### 3 Methodology

---

*This section intends to define and explain the methodological choices made. The research approach, design, and strategy convey the authors' thought processes and explain the structure of the research. Moreover, an explanation is provided on how the researchers gathered the data, and how the analysis of that was performed. The research quality is discussed to give insight into the overall trustworthiness of the research as well as the ethical considerations made during the research process.*

---

#### 3.1 Research Context

The context of the research is addressed to lay the groundwork for the methodology. The geographical location, industry sector, and firm size are all included since they may have an impact on the outcome of this study.

Firstly, the geographical context refers to the sample's location in the Nordic region of Europe, specifically Sweden, Norway, Denmark, and Finland. These four Nordic countries have comparable social, cultural, and political governance (Löf et al., 2001), implying that organisations operating in this region do as well. The Nordics are distinguished by solid welfare systems and well-developed digital infrastructures, as well as the highest level of participation and desire to learn new things in Europe (Rolandsson et al., 2020). Companies operating in the Nordics have demonstrated a high level of involvement in the use of modern technologies, such as automation and robotics, showing that businesses in this region are embracing technology (Rolandsson et al., 2020). Nordic manufacturing is well-known for its high pace of technological innovation and productivity growth through collaboration and employee participation (Mudambi, 2020). As a result, it is worthwhile to investigate organisations in this region in terms of advancements and investments to promote DT.

MNEs are highly relevant to the objective of this research. According to Abareshi (2011), there are contrasting studies about the impact of organisational size on alignment since the way organisations plan, control, and coordinate their processes can be influenced by their size. As a result, the need for alignment between digital and business strategy may be influenced by organisational scale. In large organisations, processes are organised along product lines, and as a result, a decentralised control system operates more efficiently and effectively (Abareshi, 2011). Larger firms may require a revolutionary digital vision, as well as participation and governance to build momentum for digital investments to mature (Westerman et al., 2012). For MNEs, DT highlights specific issues such as the need for inter-organisational collaboration and openness, the emergence and spread of networks, the rise in knowledge creation, exchange, and complexity, the development and adoption of new manufacturing technologies, as well as the emergence of new business models (Ozcan & Yakis-Douglas, 2020). The effects of DT are most likely to be felt by MNEs that face fundamental and varying external uncertainties on a global scale and must adjust to substantial changes brought about by digital technologies. In addition, MNEs will be under more pressure to invest in new technologies and collect, analyse, and comprehend large quantities of information (Mellahi et al., 2021). Considering these factors, the MNEs in this research must operate in a similar business environment for the study

to render comparable results. Although the researchers acknowledge that these MNEs are not equal in terms of their market offerings, they operate in the same industry with homogeneous environments. This is important to obtain similar insights and understandings from the digital leaders considering investment decisions to facilitate DT. Hence, MNEs are the most pertinent companies for providing insights into investment choices involving DT since they are faced with changes to business models, shifting industry boundaries, and a variety of new competitors arising from digital technology (Mellahi et al., 2021).

Manufacturers regard DT as less of an opportunity and more of a threat than other industries (Abareshi, 2011; Albukhitan, 2020). Consequently, the MNEs under investigation operate in the same sector, namely industrial goods, to provide comparable viewpoints and insights from their operations. As a result, the MNEs to be researched have B2B offerings in the industrial goods sector. Because these MNEs' clients are businesses too, this sector is particularly influenced by DT since the MNEs must develop digitally while participating in their customers' digital journey. In turn, MNEs in this industry are heavily influenced by DT due to both stakeholder expectations and global needs (Strange et al., 2022). Yet, the growth in the development and complexity of advanced manufacturing technologies, new business models for digital platforms, and network diffusions are disrupting MNEs as incumbents (Mellahi et al., 2021). Strategic alignment can be especially difficult in manufacturing industries with economic downturns and insufficient resources, for specific organisational strategies and at specific stages in the organisational life cycle (Abareshi, 2011).

### 3.2 Research Philosophy

To understand the methodological choices regarding the researchers' intended observational lens for this study, the overarching concepts of ontology and epistemology are explained. According to ontology, reality can be seen as either created, which denotes the effect of social interactions and settings, or objective, which implies independence from the researcher. Following logically from the former, epistemology is critical in business research, such as this one, to comprehend how the study should be conducted. The two branches of this philosophy are positivism and interpretivism. Whereas positivism is objective to the researcher's findings and deductive in its reasoning, mirroring the principles of natural science, interpretivism is critical to scientific models and inductive in its reasoning, reflecting the subjective character of human behaviour and social constructs. Thus, interpretivism considers the distinctions between human subjects and objective natural sciences; consequently, it is necessary to comprehend the subjective meaning of social acts. (Saunders et al., 2015; Bell et al., 2019)

Because the goal of this research was to acquire insights into digital leaders' facilitation of their enterprises' investment behaviour while aligning strategies, the ontological perspective of constructivism and the interpretivism paradigm are appropriate. This is due to the study's aim of investigating and comprehending human views, ideas, and actions taken when making investment decisions generated by the sample themselves. In this way, the researchers were enabled to explore the "how" rather than the "what" (Bell et al., 2019). The chosen philosophy acknowledges that digital leaders are knowledgeable agents who impact their environment and construct their realities, implying that they can express their own beliefs, thoughts, and ideas

(Gioia et al., 2013; Saunders et al., 2015). This implies that they are not perceived as objective and external, but rather that their thoughts and notions can change and that they are aware of their own judgments.

### 3.3 Research Approach

The realm of research is primarily branched into two major approaches that explore the interplay between theory and observations. These two approaches, inductive and deductive, differ in their execution and suitability for research. Inductive research begins with empirical observations of a particular phenomenon, aiming to extract general explanations to end with the formulation of a theory. On the contrary, a deductive approach starts with the development of a general theory, followed by the formulation of hypotheses, and empirical observations of a specific phenomenon to test these hypotheses. Given the variations in the execution of these two approaches, their suitability for research strategy also diverges. Inductive reasoning is commonly used in qualitative research, which is grounded in building theories from subjective observations. Conversely, deductive reasoning is typically applied in quantitative research, which assumes knowledge to be measurable and objective in nature. (Saunders et al., 2015; Bell et al., 2019)

This research observed the intangible aspects of human thoughts, experiences, and decision-making processes. While the research question is exploratory in nature and seeks to understand a specific phenomenon, there are already established theories and literature regarding the research topics of DT, investments, strategies, and digital leaders. Therefore, this research could not be purely inductive as it does not aim to develop a new theory. Neither is deductive reasoning suitable because the research sought to understand a social phenomenon through empirical observations, which are not favourable to theory testing. This research required an alternative method of reasoning to allow for the exploration of new ideas and opinions while also being grounded in existing theories, hence, the abductive approach was applied. The abductive research approach overcomes the limitations of deductive and inductive reasoning by applying a pragmatist perspective (Bell et al., 2019). While a deductive approach is not flexible enough, an inductive approach cannot guarantee theory building solely from empirical observations. Instead, the abductive approach involves simultaneous data collection as it is a back-and-forth process between social reality and literature (Bell et al., 2019). Therefore, this research deemed the abductive approach to be most suitable to combine existing theories about the research topic and collect data from empirical observations of digital leaders' perceptions of their practices in relation to the MNEs' investments, strategies, and DT.

### 3.4 Research Strategy and Research Design

Generally, empirical research is conducted using either a quantitative or qualitative research strategy. While research strategies with quantitative nature conform to scientific models that view reality as objective, qualitative strategies seek to comprehend complex social phenomena by examining subjects' interpretations. Prominently, qualitative research contrasts quantitative ones by being more interested in words rather than numbers. (Saunders et al., 2015; Bell et al., 2019)

For this research, a qualitative strategy was chosen due to the following reasons. The study is interested in a phenomenon specifically linked to DT in MNEs within the Nordic industrial goods sector, involves digital leaders' factors creating individual experiences, and directly concerns decision-making processes of investments. The research question calls for the data collection to be of qualitative nature to gather and evaluate these individual experiences, perspectives, and decisions. In qualitative business research, meanings are assigned to the specific phenomenon under investigation which defines the reality of the study's objects (Saunders et al., 2015; Bell et al., 2019). Contrastingly, quantitative research strategies are appropriate for research objectives that study causal to statistically measure the significance of the results (Saunders et al., 2015; Bell et al., 2019). Thus, for this research's purpose, a qualitative strategy was relevant because of its interpretivism and the research setting involving a new and developing phenomenon that the researchers aimed to gain an in-depth understanding in relation to the research context.

Certainly, DT can be considered a developing and emerging phenomenon within the industrial goods sector, thus, it will impact the investment behaviour of the MNEs within the sector. Additionally, it could also be assumed that digital leaders within Nordic MNEs approach the investment processes associated with digital technologies differently, thus, their subjective opinions and experiences are considered to be personal and unique. Therefore, this research aimed to understand the variations and similarities in their perspectives by applying a cross-sectional research design as this adhered to the research's exploratory nature (Bell et al., 2019). A cross-sectional research design involves contrasting and investigating more than one case to establish an understanding of the phenomenon at one point in time (Saunders et al., 2015) where the variation is identified through a systematic method and a consistent benchmark (Bell et al., 2019). Accordingly, this design was favourable over other choices because it made it possible to explore multiple MNEs within the same sector at once to examine the status quo of digital investment behaviours and digital journeys from the perspectives of digital leaders.

### 3.5 Data Collection

The most suitable data collection method for this research was interviews as cross-sectional research designs involve both different data analysis methods and interview techniques (Saunders et al., 2015; Bell et al., 2019). Based on the studied phenomenon's complexity, the research approach further opted for comprehensive encounters with interviewees. Interviews produce large datasets with in-depth and detailed insights on a micro-level and generate an understanding of meanings within social settings (Bell et al., 2019). Thus, interviewing was the preferred data collection method since the purpose was to generate data from a real-world context of MNEs' investments in digital technologies and alignment with corporate strategies.

The technique deemed as most appropriate was semi-structured interviews, meaning that some questions were pre-determined according to the research question and theoretical framework while others emerged during the interview. Semi-structured interviews were beneficial as they enabled the researchers to generate insight from an expert viewpoint in relation to an interview guide while allowing for flexibility (Saunders et al., 2015). Compared to structured interviews, semi-structured interviews facilitated an exploratory approach due to their limited structure.

With this technique, the interviewees seemed open to providing longer and richer answers by giving detailed insights about their perspectives on the topic and expertise within their field. Additionally, it allowed for obtaining rich answers, comparing, and contrasting the responses as the questions asked were similar, and asking re-stating, follow-up, or explanatory questions (Saunders et al., 2015; Bell et al., 2019).

When developing the interview questions, they were aimed at collecting qualitative data that provided a comprehensive answer to the research question. The conducted interviews did indeed give an extensive and deep understanding of the phenomenon as the questions allowed the respondents to critically reflect upon their reality, consider their own actions, and outline them in a storytelling manner (Rowley, 2012). The prepared interview questions specifically aimed at capturing the interviewees' reflections and thoughts about digitalisation, investment decisions, and strategic alignment. For example, the question "*What is your personal understanding of digital transformation?*" gave the researchers a clear understanding of the respondents' perceptions of the topic. Essentially, storytelling surfaced when the interviewees gave specific examples of how they make certain investments within digital technologies and how these are aligned with the business strategy. Furthermore, probing and follow-up questions emerged during the interviews that allowed for further details about the respondents' thoughts and opinions. Hence, both present and retrospective data could be obtained from the interviewees' perspectives and experiences of the phenomenon (Gioia et al., 2013). For instance, the follow-up question "*How do you decide on what to invest in and who initiates the investments?*" was asked when the topic of driving and initiating investments in digital technologies was brought up by respondents to get a present and retrospective view on the decision-making process while aiming to elaborate the interviewees' answers.

### 3.5.1 Sampling Procedure and Participants

Contrasting quantitative sampling, the goal of qualitative sampling is not to choose a sample based on its ability to generalise to a larger population but rather to collect information from a group who are considered to have relevant information to benefit the research purpose (Saunders et al., 2015; Bell et al., 2019). Therefore, qualitative research sampling prioritises understanding a phenomenon over generalising the results (Marshall, 1996), suggesting that the sample is non-random since the collected data is not statistically analysed (Collis & Hussey, 2014) and the most beneficial sampling method can be selected for the research aim (Saunders et al., 2015; Gill, 2020). Because of this, purposive or judgement sampling qualified as the most adequate strategy for selecting the sample for this research. This type of sampling allowed the researchers to actively select subjects in a strategic way to align the sample with the aim of the research (Marshall, 1996; Saunders et al., 2015; Bell et al., 2019). Moreover, this research applied snowball sampling to generate data from two levels of the organisational hierarchy being the executive level and the managerial level. At the end of an interview with a selected participant, the question of contacting a relevant manager or executive at their MNE within the field of digitalisation was asked, and the selected interviewees then facilitated the contact. Thus, the sample consisted of semi-structured interviews with executives and managers, meaning that the unit of analysis was at the individual level.



When searching for relevant MNEs, information search and industry knowledge about the industrial goods sector was applied. Additionally, a collaboration with a third-party company facilitated the search for relevant MNEs as it assisted in finding the most appropriate, market-leading organisations based on pre-set criteria. The following criteria and requirements were applied when selecting the MNEs during the sampling process:

1. The organisation is an MNE that has more than 15 000 employees in multiple geographical locations.
2. The MNE is an incumbent and has a long-standing legacy in its market.
3. The MNE is a manufacturer in the B2B sector.
4. The MNE has operations and offices in one or multiple Nordic countries (Sweden, Denmark, Finland, or Norway).
5. The MNE makes investments in digital technologies.

Following the selection of MNEs, the sample consisted of executives and managers working with digitalisation. Because of the sampling facilitation from the third-party collaboration, determining criteria for these employees could be set to ensure that the most relevant individuals, according to their expertise, could be interviewed within the respective MNE. The executives at the chosen MNEs fulfil the following requirements:

1. The executive is part of the management of the organisation including the authority to make decisions and has responsibility over multiple teams.
2. The executive holds a relevant role in the MNE meaning that they work directly with and are involved in strategies or digitalisation.
3. The executive has a direct influence on the decision-making process within investments in digital technologies.

Moreover, the managers at the selected MNEs fulfil the following criteria:

1. The manager works directly with digitalisation and digital technologies.
2. The manager receives digitalisation directives, indirectly or directly, from executives within the same MNE.

Thereby, these interviewees were ensured to be experts within their occupation and possess great knowledge of the MNEs' respective strategies, businesses, and investments. Additionally, the interview question "How would you describe your role at company X?" further ensured that the interviewee was relevant to this research and that they were experts in their field. The executives' answers included responsibilities such as setting the budget, hiring the appropriate workforce, coordinating, and developing strategies, and receiving input from their employees about investment needs to make decisions. The managers' answers included technical solutions, R&D, product development, and driving strategies. Additionally, as presented in the theoretical framework, digital leaders can be found in different hierarchical levels in an organisation as the drivers of DT in an organisation can be a combination of top-level executives, digital strategists, and managers (Westerman et al., 2011; Zoppelletto et al., 2023). Thus, interviewing both executives and managers, being digital leaders, gave a comprehensive insight into the MNEs' digital investment behaviour by combining their answers. Moreover, because of the MNEs decentralised organisational structure, the interviewed executives and

managers were important players in the investment processes since both levels of perspectives are needed when making an investment decision. By doing so, a detailed analysis and comparison of the collected data were possible since a holistic understanding of the phenomenon could be generated by the exploration of similarities and differences between the MNEs' digital initiatives and strategies within the Nordic industrial goods sector.

Correspondingly, the sample is fairly homogeneous as it consisted of MNEs working extensively toward digitalisation and making numerous investments in digital technologies, making them highly relevant and crucial to answer the research question. Another important factor is that these MNEs are incumbents with long histories and global presence, thus, they are highly influential actors within their respective lines of business. The executives, being part of the management, participate in setting the strategies regarding the business and digitalisation which then get diffused to the divisions and set the initiatives for the investments in digital technologies. Moreover, the managers provided operational insights and outlined the type of investments that are made in digital technologies in detail. Furthermore, interviewing both executives and managers in the MNEs made it possible to corroborate responses from both levels as well as generate detailed insights regarding their roles, digitalisation initiatives, investments, and strategies at two levels of perspectives, adding richness and depth to the findings. As anonymity was offered and accepted by all participants regarding the MNEs' and interviewees' names to make them more comfortable in sharing personal opinions, actions, and experiences, the study will continue with using the abbreviation of the respondent (R) and the respondent's number in the remainder of this paper.

Considering the sample size, there are no strict rules regarding the number of interviewees when applying the purposive sampling technique since it depends on the research question (Saunders et al., 2015). Instead, the focus lies on the quality of the research when collecting qualitative data. Still, Saunders et al. (2015) present a framework including the minimum sample size range of 5-25 when using the semi-structured interview technique to conduct in-depth interviews. Thus, by applying purposive and snowball sampling, a total of four executives and seven managers were interviewed at six MNEs and constituted the sample of this study as summarised in Table 2.

Table 2: List of Interviewees

<b>Nr</b>	<b>Line of Business</b>	<b>Interviewee's Title</b>	<b>Interview Date</b>	<b>Length of Interview</b>	<b>Format</b>
R1	Processing and packaging systems	Capability Manager of Modelling and Simulations	2023-03-08	60 min	Zoom
R2	Industrial machinery solutions	Senior Director of Technology Management & Innovation	2023-03-22	80 min	Zoom
R3		Head of Digital Engineering Enablers	2023-03-23	60 min	Zoom
R4	Mechanical engineering	Senior R&D Manager of Mechanical Design & Simulations	2023-03-17	50 min	Zoom
R5		Senior Manager for Advanced Manufacturing Simulations	2023-04-04	50 min	Teams
R6	Engines solutions	Chief Technology Officer	2023-03-21	60 min	Zoom
R7		Chief Data & Information Officer	2023-03-22	60 min	Teams
R8		Portfolio Manager in R&T	2023-03-30	60 min	Teams
R9	Engines and vehicle solutions	Senior Technical Advisor of R&D, Modelling, and Simulation	2023-03-29	45 min	Zoom
R10	Heavy equipment	Director of Structural & Dynamic Analysis	2023-03-24	45 min	Zoom
R11		Director of Systems Performance Analysis	2023-04-12	60 min	Zoom

### 3.5.2 Process of the Interviews

After the selection process, the sampling continued with contacting the chosen interviewees through e-mails that contained a description of the research topic, an invitation to the interview, and a request for the participant's preferred interview environment. Even though the preferred environment would have been face-to-face to observe the respondent's body language, behaviour, and gestures (Saunders et al., 2015; Bell et al., 2019), online interviews provided flexibility and adjustments with the possibility of observing facial expressions and emotions by using cameras. It has been suggested that interviews that are not face-to-face lessen the understanding that can be maintained between the interviewee and the interviewer, but this has become less important in online interviews because it is an established way of communicating and interacting for many people today (Bell et al., 2019). Since the respondents got the opportunity to choose their preferred interview environment and platform, they presumably felt more at ease and relaxed, making their responses reliable. Once the participants accepted the invitation for an interview, a consent form regarding their voluntary participation and permission to use the obtained material was sent and signed by all interviewees before the commencement of the interview.

After establishing the theoretical framework, an interview guide was constructed to accommodate the semi-structured interview technique (Saunders et al., 2015; Bell et al., 2019). The interview guide consisted of prepared questions guided by the literature and research scope, and suggestions of probing and follow-up questions, establishing seven themes; 1) introduction about the research topic and purpose; 2) about the respondent; 3) business and overall strategy, 4) DT and digital strategy, 5) investments and investment decisions, 6) digital maturity, and 7) closing the interview (See Appendix 0). The first part of the guide was aimed at clarifying the purpose of the interview, requesting to audio-record the interview after the interviewee has agreed to voluntarily participate (Shenton, 2004), and a reminder about anonymity and consent form to establish a safe environment for the interviewee. The core questions revolved around the research topic, i.e., all key components of the research questions, to render an open setting for the respondents to speak freely in a storytelling manner, provide insights into their actions, decisions, and opinions, and allow for in-depth discussions. The structure of the questions was intentionally made to enable the interviewee to think about present and retrospective situations, and then, based on their answer, explore their understandings and thoughts. For example, the purpose of beginning with questions about the overall business strategy, such as "*How is the business strategy developed and by whom?*" was intentionally made to be followed by questions regarding DT and digital strategy to explore the connection between the business and digitalisation efforts within the organisation. The interview guide was the same for both the executives and managers except for asking managers "*What is your role in the decision-making processes?*" regarding investments to identify their participation and importance in these processes.

To ensure that the proposed interview guide was in alignment with the research purpose, a pilot interview with a professor, that is an expert in the field of DT, was conducted before the interviews with the participants. From their feedback, changes in the structure and proportion of the questions were made to further ensure in-depth data generation and efficient utilisation of the interview time. During the interviews, the researchers facilitated the interviews

according to the guide, monitored responses to remain focused on the topic, and asked probes when appropriate and needed. Additionally, the audio recordings of the interviews allowed the researchers to revisit and transcribe, freeing cognitive resources to focus on asking follow-up questions and monitoring the responses (Bell et al., 2019). To further establish honesty and security during the interviews, anonymity was assumed until instructed otherwise. Moreover, the risk of interviewer bias, being the conscious or unconscious act of affecting the interview process by asking leading questions or applying personal opinions (Saunders et al., 2015; Bell et al., 2019) was reduced by the development of the interview guide to remain focused and not diverting from the topic, as well as two researchers facilitating the interview process. Similarly, the risk of response bias, being the possibility of receiving irrelevant answers from the interviewees (Saunders et al., 2015; Bell et al., 2019) was reduced by asking probing and follow-up questions to repeat the interviewees' answers for clarification purposes and validate answers.

### 3.6 Method of Data Analysis

Once the data was collected from the semi-structured interviews, the research continued with analysing the gathered data by applying a thematic analysis approach. The aim of the data analysis was the interpretation of the collected data and the reduction of the data to be able to recognise relations, patterns, and comparisons (Bell et al., 2019). Thematic analysis was preferred as the themes were to be identified from the interviewees' answers by noticing differences and similarities in their responses. This type of analysis was a systematic process of continuously displaying the data by identifying themes in the dataset which were used to answer the research question; hence, it served as a method of gaining an understanding of the researched phenomenon (Bell et al., 2019). Following the logic of the abductive research approach and the collection of a large dataset, the thematic analysis was an iterative process between data collection and interpretation. By applying the thematic analysis technique, the data could be reduced to contain the most relevant and essential information needed for answering the research question as the data was analysed in accordance with the research purpose and theoretical framework.

The data analysis began by transcribing the recorded material using the transcription function available on Microsoft Word, and then using the thematic approach to organise the data into first-order concepts, second-order themes, and aggregate dimensions (Gioia et al., 2013). The analysis of first-order concepts entailed observing and recognising respondent-centric terms, noting differences and similarities in the dataset, and coding the data (Gioia et al., 2013; Saunders et al., 2015) by using the qualitative data analysis tool of Atlas.ti. This level of analysis was solely data-driven as it was coded without a pre-existing coding frame, without adjustments to the preconceptions of the researchers (Braun & Clarke, 2006), adhered to the terms and statements used by the informants, and was guided by the research question. The reason for this first-order analysis was to identify common or repeated patterns, reduce the data by categorising the participants' prevalent actions, decisions, and opinions, and combining these into concepts (Saunders et al., 2015). To justify the meaning of a "concept", the researchers define it as a cluster of codes as the research gathered rich and large data, making it appropriate to specify overarching concepts in the dataset by identifying similarities and

repeated terms. For example, the first-order concept of *“Investments in tools and technologies”* emerged from clustering the codes of *“Investments in software”*, *“Investments in hardware”*, and *“Investments in equipment”*. Additionally, code saturation was reached at the tenth interview with the eleventh one confirming it, meaning that no new codes were obtained, which can be explained by the predetermined criteria for the sample as well as the similarities between the participants’ answers, implying in-depth findings.

Moreover, the second-order analysis involved the furthering of the first-order concepts into themes by applying researcher-centric implications (Gioia et al., 2013). Therefore, the aim was to describe the decision-making process regarding investments, the respective alignment with the corporate strategy, and the respondents’ actions concerning the DT journeys in a general manner by recognising relations. A common technique of conducting the second-order analysis at the latent level was used to identify underlying meanings, thoughts, and reasonings behind the first-order concepts (Braun & Clarke, 2006), making the second-order themes emerge from the implied meaning of each interview’s context. For instance, the first-order concepts of *“Building and executing the strategy”* and *“Adopting to the external environment and screening for trends”* led to the second-order theme of *“Developing the strategies according to changes in business needs”* as the concepts combined describe the MNEs’ actions and activities related to the business and corporate strategy.

Ultimately, the thematic analysis ended in furthering the second-order themes into aggregate dimensions by displaying how the research advances from raw data into structured dimensions (Gioia et al., 2013). The aggregate dimensions were identified by clustering similarities from the themes into further combinations, leading to four aggregate dimensions. For example, the dimension of *“Influence of MNE-specific factors”* is the aggregate of two second-order themes that together describe the direct influences on investment behaviours that are specific and centric to MNEs. Thus, the analysis resulted in a data structure, presented in chapter 4, that illustrates the relationships among digital leaders’ facilitation of MNEs’ investment behaviour concerning digitalisation by drawing general implications from the aggregated dimensions.

Furthermore, the risk of investigator bias was reduced in the data analysis by applying investigator triangulation in the post-transcription process. This was done by the researchers individually and independently interpreting, reading, and understanding the transcribed material (Collis & Hussey, 2014). Because of these individual analyses, each of them could be compared with the other through open and joint discussions of ideas, findings, and interpretations, thereby reaching the same conclusions.

### 3.7 Research Quality and Ethical Considerations

The commonly discussed criteria to ensure a high level of research quality are reliability, replicability, and validity (Shenton, 2004). Since these concepts mainly refer to quantitative research, they are difficult to apply to qualitative research. While both study methodologies are valuable, the meaning of each criterion must be adjusted properly when applied to qualitative research (Bell et al., 2019). One method for incorporating reliability and validity into qualitative research is to reduce the role of measurement to make it more appropriate. Another way is to assess the research’s quality based on its trustworthiness and authenticity. The criteria

of *credibility*, *transferability*, *dependability*, and *conformability* were therefore considered to assure the trustworthiness of this qualitative study (Guba, 1981; Lincoln & Guba, 1982; Krefting, 1990; Shenton, 2004).

*Credibility*, the confidence in the truth of the research findings, ensures the correct representation of the informants' opinions in the analysis when conclusions are drawn from the collected data (Shenton, 2004). Credibility may be established in various ways such as peer debriefing, member checking, or triangulation (Shenton, 2004; Anney, 2014). In business research, the researcher considers the plausibility and legitimacy of the collected and analysed data to affect reader acceptability (Bell et al., 2019), where readers that are familiar with the research topic should be able to comprehend the findings and conclusions (Krefting, 1990). The researchers recognised the significance of credibility in this qualitative study. Therefore, the methods of peer debriefing, respondent validation, and triangulation were applied to enhance the study's credibility. Peer debriefings provided support from other professionals within the field and were sought out in regular group supervisions with other students of the faculty and a supervising professor. Respondent validation is a procedure by which the researcher informs the respondent about the study's findings (Bell et al., 2019). Therefore, the interviewees were offered to read through the quotes used in this study and alert the researchers if anything was misconstrued. This is a method of ensuring that the information provided by the respondents during interviews accurately reflected their experiences and that the empirical results represented that reality. This insurance established structural corroboration and coherence, which involved testing all the data to ensure that there was no internal conflict or inconsistency. It further established referential adequacy, which entailed testing the analysis and interpretation against the documents used during data collection before producing the final document (Guba, 1981; Anney, 2014).

*Transferability* describes the ability of research findings to be transferred to different contexts and is the interpretive equivalent of generalisability (Anney 2014; Bell et al., 2019). Demonstrating transferability can be challenging because qualitative research is typically more concerned with depth than breadth, hence, gives contextualised findings. Although it is not imperative, it should nevertheless be taken into consideration. For others to assess the likelihood of generalisability, qualitative research relies on providing vast volumes of rich and thorough data (Bitsch, 2005; Bell et al., 2019) by focusing on a comparison-friendly description of the data (Krefting, 1990). By presenting as many details as possible regarding the subjects and interview procedure as well as data collecting and analysis techniques, the level of transferability was alleviated (Shenton, 2004). In that sense, purposive sampling additionally ensured transferability because the selection of informants was based on the specific purpose of answering the research question, thus, the focus was to find particularly knowledgeable informants (Schutt, 2006; Anney, 2014).

*Dependability* is the degree to which the problem formulation, interview method, sample, and analysis are descriptive while still enabling the researcher to maintain thorough records of all study phases (Shenton, 2004; Bell et al., 2019). It is concerned with whether the study is precise, methodical, and adequately documented (Collis & Hussey, 2014). Dependability in this research was established through audit trails, meaning that raw data, the interview guide,

and transcripts were kept and provided if asked to cross-check the process. In turn, this promoted transferability by enabling others to conduct the same research (Shenton, 2004; Bell et al., 2019). Furthermore, stepwise replication increased dependability because the researchers analysed the same data separately and compared their results to address inconsistencies as per the previously described investigator triangulation. Finally, peer examination contributed as much to dependability as it did to the credibility of this study (Anney, 2014).

*Confirmability* is the influence of the researcher's personal beliefs, values, and imagination on how the study's findings are interpreted (Bell et al., 2019). It is also the degree to which the research findings can be confirmed or corroborated by other researchers (Anney, 2014). In business research, it is difficult to be completely objective, regardless of the researchers' intentions (Bell et al., 2019). Confirmability for this study was therefore achieved through audit trails, triangulation (Anney, 2014), and the previously described actions taken to minimise response and interviewer bias. Thus, the researchers worked towards objectivity while simultaneously recognising possible personal biases and probable flaws in their methodological decisions (Shenton, 2004).

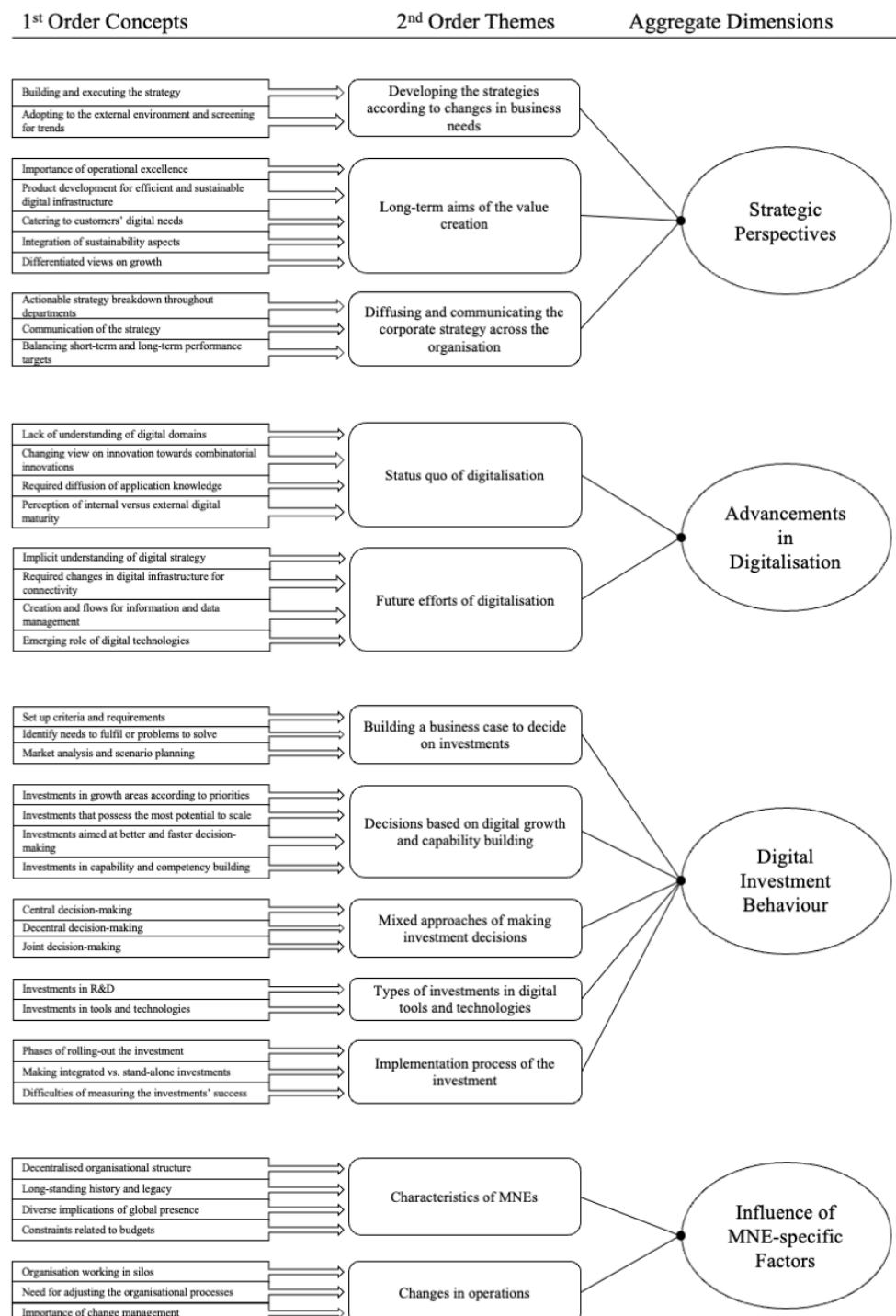
Essentially, this study applied ethical considerations during the whole research process by strictly following the four ethical principles of clear and transparent informant consent, protection of the privacy of all participants, avoidance of harm to all participants, and prevention of deception (Bell et al., 2019). The study assumed anonymity about the participants' names as well as the MNEs' brand names by their consent to exclude this information. In addition, the selected interviewees were well-informed about their participation in this study by receiving a consent form prior to the interview, which they all signed, and an information sheet regarding the interview's purpose. This included detailed information about the study, data processing, anonymity, and voluntary participation. Confidentiality measures were taken by not including sensitive information regarding the MNEs, not providing information about the respondents to the other participants and ensuring that they are unaware of each other unless they were from the same MNE. Furthermore, the transcribed material from the interviews was not included in the study until after sending it to every corresponding interviewee for verification and confirmation that the obtained data was correct and non-confidential. To further ensure ethical measures and transparency, the researchers have to the best of their ability included all steps taken in the research process and did not omit parts. As mentioned before, peer examination was also conducted during the research process by having neutral parties with no personal interest in the topic review the study to prevent deception.



## 4 Empirical Findings

*This section demonstrates the collected data with respect to the study's research purpose and question. Presented below is the data structure including the aggregate dimensions of MNEs' strategic perspectives, advancements in digitalisation, digital investment behaviour, and influence of MNE-specific factors as well as the respective themes that emerged from the interviews.*

Figure 5: Data Structure



## 4.1 Strategic Perspectives

The aggregate dimension of *Strategic Perspectives* consists of three second-order themes. They demonstrate the development of the strategies according to changes in business needs, the long-term aim of value creation, as well as diffusing and communicating the corporate strategy throughout the organisation.

### 4.1.1 Developing the Strategies according to Changes in Business Needs

This section demonstrates the theme of *Revising the Strategies according to Changes in Business Needs*. This theme includes two first-order concepts of *building and executing the strategy* and *adapting to the external environment and screening for trends*.

All respondents agreed that the top management gives a strategic direction that the individual functions plan their activities around. Additionally, the departments decide and plan how to deliver on the corporate strategy and communicate their business strategies to the top management. For this process, R7 explained that strategies are discussed on different levels of leadership and the managers within the respective departments are:

*“[...] asked to submit ideas on how they are planning to deliver on the strategy from their functional perspective.” – R7*

While building the strategy, there might arise discussions between the top management and the functions that result in adjustments which were not planned for initially. This was brought up by most of the respondents and specified by R4:

*“It’s kind of a top-down process. [...] So you could see that it goes both ways, the strategy is cascaded down through the organisation and then the organisation provides the push back that this is then our activities supporting the strategy, and that push and pull goes on and off and sometimes that also leads to the strategy being updated.” – R4*

This way of strategic work is complemented by the MNEs adapting to their external environments and screening for trends to build their capabilities and competitive advantages which is, according to R10, sometimes done by taking inspiration from other industries. All respondents agreed that these factors should be reflected in the business strategies. In line with this, R11 emphasised the importance of the company’s future orientation:

*“We have [...] a technology funnel. We look ahead to not only support the technical activities that we do currently [...] but also understanding where we need to go in the future regarding improvements that we need to make. [...] If a certain technology is on the horizon and someone’s going to need a model, then we need to make sure that we’re prepared to do our part for that.” – R11*

### 4.1.2 Long-term Aims of Value Creation

The following section showcases the theme of *Long-term Aims of Value Creation*. The theme includes five first-order concepts of the *importance of operational excellence*, *product development for efficient and sustainable digital infrastructure*, *catering to customers’ digital needs*, *integration of sustainability aspects*, and *differentiated views on growth*.

All respondents commonly emphasised the importance of operational excellence to ensure the same high-quality standards throughout the value and supply chains. According to R2, R6, R8, and R10, a crucial factor to facilitate operational excellence is to gather the employees on different levels to generate holistic insights. On one hand, it is important for employees on the operational level to prove the effectiveness of new technological tools to keep them motivated. On the other hand, showing the tools' connection to the strategy helps build top management's trust in new technologies.

Another essential strategic element in creating value is product development with the goal of creating better offerings in the most efficient ways. This is supported by R1, R2, R3, R4, R6, R9 and R10, and R4 specified the following:

*“We have kind of a dynamic way of working with development because [the departments] have one objective, and that is to deliver new products to the markets, and our objective is to ensure that we do it in the most efficient way and the most intelligent way.” – R4*

In turn, R2, R4, R6, and R8 reported that this requires the presence of the right digital infrastructure and connected databases to understand how to build better products and how to offer better solutions to customers. As stated by R4, R6, R8, and R9, digital technologies and tools facilitate efficient and sustainable product development and simultaneously ensure safety and constant improvement, as explained by R8:

*“For us, I think [strategic ambitions are] different perspectives [...]. One is product quality, or product-centred digital transformation, which is giving us safer products, better products. We can actually build on that data, understand how we can make them even more efficient than ever, our engines, sustainability, whatever the target is.” – R8*

Moreover, catering to customers' digital needs was mentioned by the interviewees as essential to generate a holistic view of the market environment when creating value propositions. R2, R4, R6, R9, and R10 explained that their customers are on their own digital journey and, therefore, it is crucial to help them achieve their goals and offer the right digital services along with the products. In that regard, R4 mentioned the improvements imposed by DT mainly concern data collection, visualisation, and connectivity. While mentioned by R2, R4, R9, and R10, this was summarised by R3:

*“The customers want [...] to digitalise their products. They want to monitor their systems [...] and they need components to talk to their systems and become more intelligent to do that. [...] So a lot of our digital [offerings], we see as based in our ability to be virtual engineers.” – R3*

It was stressed by R2, R3, R4, R6, and R10 that every organisation has the strategic integration of sustainability aspects on their agenda in one way or another. However, R2 elaborated that delivering on this objective lies within the business strategy of the individual departments. Thus, R3, R4, R8, and R9 acknowledged that the MNEs must become more sustainable themselves to be attractive to their customers by being at the forefront of climate actions.

Finally, the interviewees expressed differentiated strategic views on growth and its importance to value creation. R2 summarised the opinion of some respondents:

*“We see a need to shift focus as the world is not growing at the same rate – so selectively on growth, particularly growth opportunities driven by the green transition but also ensure we keep our focus on core basics of keeping profitability, productivity, [...] and cash flow where it should be.” – R2*

Declining overall growth rates in the market make it essential to shift strategies away from pure financial growth towards creating more efficiencies by investing in digitalisation, as was mentioned by R1, R3, R6, R7, R8, and emphasised by R2:

*“One vision is always going to be financial. So, at the top, we will set some fairly clear ambitions about what kind of growth we would like to see, what kind of investment levels there are going to be, and what kind of cash or margins we want to see in the whole group, based on what we think is possible in all the different businesses. [...] We build a strategy for where we need to invest, where we need to grow [...]. So that’s maybe digitalisation of the business, it’s internal, it’s performance, it’s operations, but of course, it unlocks growth because it unlocks productivity, and the business can do things it couldn’t do before.” – R2*

The focus on growth and expansion was described by R1, R3, R4, R7, R8, and R9. R8 further bridged the gap between the business strategy and digitalisation for value creation and asserted that the corporate strategy is centred around the product offerings with clearly identified areas for excellence, prioritisation, and expansion, both in terms of business models and customer relationships. According to R3, R6, and R8, this directive is tactically supported by selecting focus areas in the individual departments that align with the customers’ demands and aim at solving their problems.

#### 4.1.3 Diffusing and Communicating the Corporate Strategy across the Organisation

This section displays the theme of *Diffusing and Communicating the Corporate Strategy across the Organisation*. This theme includes three first-order concepts of *actionable strategy breakdown throughout departments, communication of the strategy, and balancing short-term and long-term performance targets*.

The corporate strategy must be diffused throughout the MNEs and communicated in ways that facilitate all employees to act on it within their respective areas of responsibility. Specifically, R2, R3, R4, R7, R8, and R9 agreed that this relates back to an actionable breakdown of the corporate strategy to the individual departments on how they can contribute. It may be that not all functions can deliver on all parts of the corporate strategy, thus, they need to specify concrete actions on how their activities link to the strategy. R4 described this process:

*“[My leader] would then communicate those [activities] outwards. [...] I think it’s important if you want to have both support and funding when initiating a new sub-strategy or a new strategic initiative. It’s important that it links to the overall strategy.” – R4*

However, R1, R3, R4, R8, and R9 reflected on the communication of the strategy because the more the corporate strategy gets diffused, the more freedom to interpret it is created by both the ones who communicate it and the recipients that will work with it. After successfully disseminating the strategy throughout the organisation, it becomes important to balance short-term and long-term performance targets. On a higher level, these targets consider financial

measures. However, all respondents elaborated that their organisations strive to maintain a balance between a pre-determined level of profitability and high innovation spending that includes large investments in technologies and tools, as elaborated on by R2:

*“We have two principles. One is long-term value creation [that] implies a certain level of re-investment. So, we don’t set our targets to just maximise profit or cash flow. We will set these to ensure a balance, so we will also target a relatively high investment [capital expenditure], as well as keep a high innovation spending. We will aim for a level of profitability that funds that. [...] Our ambition is to invest enough that our company is going to be on the leading edge in the long-term rather than short-term gains and that’s a deliberate stated vision, communicated to all employees [...].” – R2*

## 4.2 Advancements in Digitalisation

The aggregate dimension of *Advancements in Digitalisation* consists of two second-order themes and concerns the interviewees’ insights into digitalisation efforts within their organisation. This regards both the MNEs’ progress to date as well as their opinions on necessary efforts in the near future.

### 4.2.1 Status Quo of Digitalisation

This first section shows the theme of the *Status Quo of Digitalisation*. This theme includes four first-order concepts of *lack of understanding of digital domains*, *changing views on innovation towards combinatorial innovations*, *required diffusion of application knowledge*, and *perception of internal versus external digital maturity*.

A lack of understanding of digital domains emerged when the respondents explained that their organisations either do not distinguish between the concepts digitisation and digitalisation but rather use them interchangeably (R1, R2), only refer to digitalisation (R4, R9), or do not see any difference between the terms (R3, R5, R6, R7, R11). Still, R3, R5, R8, and R9 elaborated that digitisation efforts create the foundation for digitalisation through changing the processes from paper-based to digital, which R5 specified according to the following:

*“When you say digitalisation, it means that now you have standardised processes and now they’re only digital. But for me, this should also mean that we need to change the processes, not only do it exactly the same, but in a digital way. [...] It has some other dimension [...] totally different from the paperwork. Based on that, we need to use this benefit and change and improve the processes.” – R5*

The focus is on establishing a digital infrastructure and creating databases with an emphasis on connectivity to change from document-based towards model-based ways of working, which was mentioned by R4, R6, R9, and R10. Additionally, R2, R3, R5, and R6 stressed the importance of digitalisation to build a foundation for data management within the organisation as the backbone of any business endeavour. This was highlighted by R2:

*“We do have this goal of making the core infrastructure digital and cloud-based and having master data quality on all products. We have product information systems, and this is a form*

*of digitalisation of the business. It's more about making sure our core business is fit for the future.” – R2*

Another significant finding is a shift towards combinatorial innovations rather than only seeking breakthroughs. R2, R3, R6, R7, R8, and R9 reported that organisations focus on recombining various technologies and tools to explore and create new business and operating models. This approach allows them to capitalise on existing technologies and drive innovation through their combination, which was summarised by R3 as follows:

*“Digital technologies offer the advantage of combinatorial innovation at different levels - spanning from technology to business model. [It's] once in a while that we have a significant disruptive innovation. So instead of waiting for these big breakthroughs [...], digital technology allows us to combine existing solutions to innovate.” – R3*

Furthermore, the interviewees highlighted the importance of diffusing application knowledge. R6 and R7 acknowledged the difficulties of implementing a new tool in one part of the company, and then diffusing the knowledge of it throughout the organisation. In accordance, R4 and R7 mentioned that a tool is typically trialled first in one department before being adopted more widely. R6 mentioned that transparent knowledge-sharing practices must be established to ensure that all employees have access to the information they need. Another way to successfully diffuse application knowledge throughout large organisations was described by R2, R3, and R7 with an emphasis on centralised knowledge hubs to foster information transfers and the exchange of ideas:

*“When you try to pioneer a new technology, a good way of doing it is building a knowledge hub where people can turn to, where you keep most of the competence. [...] Eventually, as the organisation matures from this hub that will grow spokes. That is the way we try to do stuff, so we have a centralised hub with the best competence and then we've got people working in [segments] that slowly, slowly build small hubs.” – R7*

Lastly, the respondents' perception of digital maturity can be divided into an internal and external view. While R2, R3, and R7 said their organisations have made significant progress internally, recalling their status quo from several years ago, they also acknowledged that there is still much potential for improvement. In comparison to their competitors, R2, R3, and R5 explained that some of their divisions may be leading, while others are lagging. However, according to all respondents, there is a long way to go to complete their DT journey. Therefore, the exploration of opportunities to further both the internal foundation of the business and the sustained value creation is at the core of the MNEs.

#### 4.2.2 Future Efforts of Digitalisation

This last section presents the theme of *Future Efforts of Digitalisation*. This theme includes four first-order concepts of *implicit understanding of digital strategy*, *required changes in digital infrastructure for connectivity*, *creation and flows for information and data management*, and the *emerging role of digital technologies*.

R1, R4, R6, R9, and R10 stated that they are not aware of an explicit digital strategy being stated in their MNEs. Rather, since there is a common goal to work towards connectivity,

‘digital’ is implicitly understood and, thus, linked to the strategic efforts and actions taken to contribute to the corporate strategy. Again, R2, R3, R5, R6, and R8 emphasised the importance of a well-functioning, standardised, and connected core infrastructure as a primary goal to facilitate the strategies:

*“Digital strategy [...] is the act of creating products and services that are rooted in data and connectivity. So, we take more control of the applications than we used to, and we use the power of connecting, intelligence, and knowledge of the applications to improve that and move into new businesses and services.” – R2*

Contrastingly, R3 and R7 explained that their MNE has an explicit digital strategy that is clearly linked to the business strategy. However, R8 raised the concern of having an explicitly formulated digital strategy. This might diminish the extent of flexibility for the MNE to develop digitally in the sense that exploration might not be possible to the extent necessary.

One of the most important and prevalent topics within digitalisation is to achieve the highest possible level of connectivity, which can be realised in two ways. Firstly, according to R1, R2, R3, R5, R6, and R7, the MNE must create a robust infrastructure to optimise internal operations. R7 summarised this as follows:

*“It’s more than just implementing digital technologies in isolated areas of the business, it’s about integrating technologies, in turn organisations, operations, and business strategy in a way that fundamentally changes how the organisation operates, creates value and interacts with its stakeholders.” – R7*

Secondly, MNEs turn to their customers’ needs to understand them and design their own infrastructure effectively. R2, R3, R5, and R8 stated that this helps to enhance the connectivity for their products, services, and solutions, hence their value creation, in the best possible ways. In relation to this, R5 specified that the communication channels between all their software are yet to be automated, which makes it difficult to follow the data and the information between them. Therefore, initiatives and decisions must be directed towards connectivity to integrate with the foundational structures. As mentioned by R2, R3, R5, R6, R7, and R10, an essential part of establishing a robust, connected, and transparent infrastructure is data management and the creation of information flows. Regarding this, R7 said that this infrastructure should be built to gather, store, structure, and make data searchable for the organisation and its data consumers. In addition to creating the flows, R4, R5, R6, and R7 stated that it should further be a constant effort to increase the technologies’ ease of use for employees and improve the quality of both the data and its respective management.

Finally, digital technologies play an emerging role in building efficiencies and increasing innovation capacities that lead to new digital capabilities. This is mainly attributed to a shift towards simulation within product development, away from physical processes or products. R3 elaborated on one example:

*“Digital engineering capabilities, such as modelling & simulation, 3D printing, or machine learning enable us to significantly speed up development and increase our innovation capacity [...].” – R3*

The respondents all agreed that their organisations are moving away from physical testing or are planning to work with simulation software for testing, due to the flexibility, freedom, and opportunities provided in designing both products and processes. Finally, R3 emphasised the strategic importance that capability building holds for MNEs to sustainably develop both their value propositions for customers and their internal operations to maintain a competitive market position:

*“[T]he initiative that we are running is about capability development. We really want to step up in the way we deliver [...] digital technologies, to engineer faster, to create better designs, to create sustainable solutions, [...] to drive productivity in manufacturing, and also to provide digital products and services to customers.” – R3*

### 4.3 Digital Investment Behaviour

The aggregate dimension of *Digital Investment Behaviour* consists of five second-order themes and demonstrates the digital leaders’ facilitation of investments in digital technologies by building a business case, the aim of the investments, the different decision-making processes that exist in MNEs, the type of investments made, and the implementation and measurement of the investments.

#### 4.3.1 Building a Business Case to Decide on Investments

This section describes the theme of *Building a Business Case to Decide on Investments*. This theme includes three first-order concepts *identifying needs to fulfil or problems to solve*, *market analysis and scenario planning*, and *setting up criteria and requirements*.

All respondents recognise problems that can be solved by digital investments. In many cases, internal needs are identified by employees who recognise areas where investments in digital technologies could improve processes, as stated by R11:

*“It would usually come organically from realising that we have a need that’s not being met by our current software.” – R11*

From an executive point of view, R7 elaborated that they work closely with the departments to deliver solutions that exceed their expectations, resulting in a bigger impact. R4 and R6 agreed with this by describing that they ask employees to identify what type of new investments they see a need for, and then decide based on those opinions. However, R6 stated that proving the benefits of the solution can be challenging since they can be hidden. According to R1, R3, R5, R6, R8, and R11, it requires building a strong business case around the need for the investment. Conducting market analyses and scenario planning were mentioned by the respondents as a means to do so. Scenario planning allows them to consider different potential futures and offers comprehensive analyses of market trends, customer demands, or new technologies that can lead to new investments being made, as described by R8:

*“We try to sit down and look at different scenario plannings, so different futures, and [...] the cycle is quite long, so you need to have a crystal ball idea of the future. So, what’s going to happen in 2050? We look at how we update [technologies] and if we learned anything from*



*customers, from our trend analysis, what will happen with big data, what will happen in the world?” – R8*

Furthering this, R5 and R10 mentioned that benchmarking against competitors can be used to determine future scenarios, allowing them to invest in areas of high potential. In addition to these external factors, their alignment with the corporate strategy should be clear to conduct investments that are supporting the operational processes. R1, R2, R4, R5, R6, R10, and R11 described another way to make investment decisions by setting up criteria and requirements that digital technologies need to meet. Thereby, investing in technologies that do not align with the strategic ambitions or that do not meet the business needs can be avoided, and they can be justified as contributing to the overall success of the organisation. R4 explained that, since multiple departments require investments, they need to ensure the link to specific strategic objectives:

*“Because there are many [departments], they are asking for investments, then you need to ensure that it’s linked to the strategy and then argue for what are the risks if we do not do this investment here, and then we have different scenarios.” – R4*

#### 4.3.2 Decisions Based on Digital Growth and Capability Building

The next section presents the theme of *Decisions Based on Digital Growth and Capability Building*. This theme includes four first-order concepts of *investments in growth areas according to priorities, investments that possess the most potential to scale, investments aimed at better and faster decision-making, and investments in capability and competency building*.

As stated by R1, R2, R5, R7, and R10, there is an increasing focus on investing in growth areas, which can be difficult to prioritise. Most of the respondents explained that, given the finite resources of MNEs, it is essential to rank investments based on their strategic importance and potential impact in terms of financial benefits and value creation. As explained by R2 and R3, the decision-making process begins with identifying the potential of the technology, proving its feasibility to scale, and justifying its alignment with the business strategy. Verifying the scalability of the investment is important and typically begins by establishing smaller projects since they require less funding, as described by R7:

*“The conflict is, because most companies are measured on a quarterly basis, they need to be able to show improvements. But what you can do [...] is that if you make the initiatives small enough, so working with a minimum viable product, then you don’t have to show so much [...]. If you start small and show enough impact, you can usually scale quite fast.” – R7*

R1, R4, R7, and R8 elaborated that, if proven successful, the investment can be scaled and, in turn, the technology gets diffused to other departments. In addition, all interviewees commented on the aims of the investments. R5, R6, R7, R8, R10, and R11 specified faster decision-making based on the information retrieved from vast amounts of data as one such aim. Hence, connecting the different databases in the MNEs is crucial, as asserted by R11:

*“Trying to connect various databases together so that we can make more efficient decisions and better-informed decisions by being able to query databases that are connected, rather than only having access to certain information.” – R11*

R10 furthered this by stating that investments in connecting the databases help business leaders make better decisions by giving them real-time options. However, to realise the full potential of these investments, MNEs must also invest in building and developing the necessary capabilities to leverage the information. Thus, another area where strategic investments are aimed is capability and competency building:

*“We have a key strategic initiative to step up in our capabilities to develop faster, to drive productivity in manufacturing and also to provide [...] digital products and services to customers [...] to see what it is that would help the business grow and then decide strategically to focus on certain capabilities that we develop.” – R4*

This enables the departments to deliver on the corporate strategy, improve product development, and respond to market changes. Additionally, R8 and R11 emphasised that these investments enhance the connectivity of information within the organisation by creating and applying knowledge to achieve strategic objectives. This was elaborated by R6:

*“The [divisions] need to build the capabilities and technology needed to make profitable productions and [...] then start business development activities with customers to make sure we win the things we think is important for the future.” – R6*

In accordance, R11 described that leveraging these capabilities is crucial to anticipate new technologies and understand the digital activities needed.

#### 4.3.3 Mixed Approaches of Making Investment Decisions

The following section showcases the theme of the *Mixed Approach of Making Investment Decisions*. This theme includes three first-order concepts of *central decision-making*, *decentral decision-making*, and *joint decision-making*.

R1, R2, R6, R7, R9, and R11 described a central approach meaning that the top management makes investment decisions concerning the corporate strategy. R1 elaborated on this by stating that when there is a big shift in the company, such as new strategic focus areas, the investments are captured and conducted centrally. In this context, central decision-making provides the advantage of strategic consistency and gives the departments the flexibility to align their tactics. Still, R11 mentioned that this approach requires strong communication between top management and the departments with those advocating for investments having to be persistent.

Another approach is decentral decision-making whereby investments are tailored to the specific needs of each department of the MNE. In this context, the knowledge and expertise required to deliver on strategic objectives typically reside within the departments. R1 and R4 mentioned the freedom of making digital investments while maintaining the provided budget, with R1 stating the following:

*“But [the top management] trust the organisation to really drive [digital initiatives], so it’s quite a freedom [...]. [The divisions] could buy something, they have a certain flexibility to buy but it cannot be too costly.” – R1*

Since the technical expertise and knowledge lies within the departments, allowing them to make decisions can also ensure that digital investments are focused on specific business needs

and objectives. R2 asserted that investments in areas such as autonomy, software, AI, pathfinding, and detection are made decentral by the divisions. However, they should be accompanied by a clear strategic direction and coordination to ensure consistency with the corporate strategy. R9 emphasised that decisions in investments concerning the actions and deliverables of the business strategy are made decentral by the departments as long as they are connected to the common tools and systems that are in place.

The last approach defined by R1, R3, R5, R6, R8, and R10 is the joint decision-making process where employees from different areas of the organisation are brought together. Joint decision-making can ensure that investments are aligned with the customer needs and corporate strategy through mutual communication. R5 explained this in the following way:

*“It’s not only people in my team, it’s also people who are actually quite relevant for this process. So, we are trying to gather a team of engineers from additive manufacturing, technicians, simulation engineers and so on. They are some kind of a benchmark group that provide the requirements. [...] The team is defined at the start, so everybody is making their opinions and then based on all these facts, we set the meeting [to discuss the investment].”*

– R5

Moreover, R3, R7, R10, and R11 emphasised the importance of sharing best practices as key stakeholders using digital technologies possess the most expertise in what is needed. However, these must be prioritised according to the corporate strategy since, as explained by R8, joint discussions around the business needs tend to include more ideas than they have people to execute on these. In agreement, R10 said that the most optimal joint decision-making processes comprise sharing ideas, expertise, and opinions to find synergies between all stakeholders.

#### 4.3.4 Types of Investments in Digital Tools and Technologies

This section displays the theme of *Types of Investments in Digital Tools and Technologies*. This theme includes the two first-order concepts of *investments in R&D* and *investments in tools and technologies*.

All respondents discussed the types of investments, where one focus area considers investments in R&D. R2, R8, and R9 viewed these as an effective way for MNEs to close gaps in capabilities by developing new products, improving existing products, or investing in the infrastructure to support manufacturing and customer needs:

*“We also ask both on the backbone infrastructure [of the organisation] but also in the segments to proactively invest to build up competence needed in the longer term. They do it in their own budgets and it is to do with the innovative solutions, virtualising the product development, [and] virtualising the services with customers. [...] We have a set of initiatives, a lot of them are infrastructure related but one of them is also the manufacturing processes themselves [...]. The infrastructure has a very strong focus on customer experience, delivery, and performance for everybody.”* – R2

Furthering this, R8 explained the reason for investing in R&D to advance in the digital journey:

*“The idea of a running project in R&D is not to have the final milestones from the project. It’s to close gaps in the capability-driven idea [...] and how you can map your product*

*process data. [...] We also put a lot of money into our process development or process simulation, which I also think resides in that type of digital transformation. Going away from [...] classical physical testing that you normally do and being better at doing process simulation of different methods.” – R8*

As described by the respondents, the main investment categories are software, hardware, and equipment. R4 summarised that they make regular investments in physical testing equipment to prove that the new digital models are correct and valid, as well as significant investments in applications and software on. Again, R2, R5, and R6 stressed the importance of connectivity, as stated by R5:

*“What is important for my department is which kind of platform we will choose for [Product Lifecycle Management] and that will also dictate which kind of solution in the future we will choose. [...] So, it’s not only stand-alone software, but it’s also our internal solution that we can easily integrate into this huge platform.” – R5*

R3 also mentioned the importance of investments in the right technologies which R6 elaborated on by stating that the significance lies in the access of data in real-time:

*“Because anything I touch right now, I can see that it connects to something that is working well, but it can’t work like that in the future because the system won’t be set up like that, [...] and some people have made their whole career of customising tools like that from data in different databases that is not connected. At some point you need to stop, I need to start changing the foundation of what we’re doing, not just some tools on the top.” – R6*

#### 4.3.5 Implementation Process of the Investment

This last section presents the theme of the *Implementation Process of the Investment*. This theme includes the three first-order concepts of *phases of rolling out the investment, making integrated vs. stand-alone investments, and difficulties of measuring the investments’ success*.

According to R10 and R11, the implementation includes many phases, and the more operational changes the integration requires, the longer it takes. This was also mentioned by R4 concerning investments in data management:

*“There’s a long implementation phase because it also changes the way that we work. So now instead of storing data on the personal computer, then I need to store it in a different system. So, there’s a lot of change management in that and that also takes years.” – R4*

Additionally, if the investment concerns implementation within multiple departments, its integration becomes even more vital. However, with connectivity being high on the agenda, the integration into the systems needs to be seamless to align with the existing platforms. R5 explained that they need to constantly assess their internal solutions to easily integrate the new software into their extensive platform.

Almost all respondents mentioned that, once the implementation is finished, difficulties in measuring the RODI may arise. This is also the reason why continued investments are aimed at the long-term to ensure that it will pay off in multiple ways, such as knowledge and value creation, rather than only short-term financial gains. Correspondingly, R4 said that measuring value and knowledge creation is difficult as they cannot be quantified. Extending this, R2

reflected that it is more of a learning loop of investing in a technology that is merged into the MNE but emphasised that it is difficult because the impact of changing the ways of working cannot be tracked. In contrast, R6 exemplified that investments that are aimed at one specific tool, such as replacing an old machine with a new one, are easier to measure by eliminating costs and increasing efficiency. Even so, R7 brought up an issue regarding this:

*“It is difficult because initially the initiatives don’t pay off. It’s rare that the initiatives pay off in the short term, and that’s why it’s so difficult [...] to convince that [making the investment] is the right thing to do.” – R7*

Therefore, showing short-term gains from investments is difficult and, according to the respondents, there are few established techniques for measuring the investment’s long-term impact on value and knowledge creation.

#### 4.4 Influence of MNE-specific Factors

This last aggregate dimension presents the specific influential factors that MNEs have when deciding to invest in digital technologies that can impact this process. This dimension influences the other three aggregate dimensions as it entails the characteristics that MNEs possess and the changes in the operational processes needed to digitally advance.

##### 4.4.1 Characteristics of MNEs

This first section shows the theme of the *Characteristics of MNEs*. This theme includes four first-order concepts of *divisional organisational structure*, *constraints related to budgets*, *diverse implications of global presence*, and *long-standing history and legacy*.

All investigated MNEs adopt a divisional company structure. Regarding this, R3 mentioned the challenges and benefits associated with adapting to external and internal changes as well as capability development:

*“The more you’re far away [from the functions near the customer], the more difficult it is to know all the insights. At the same time, you get the chance to see the bigger picture and see where the company is moving. [...] It affects the speed that we see in terms of change and affects a lot of how we adapt to it [...]. It is a bit more challenging.” – R3*

This connects back to the allocated budgets that get dispersed between the divisions. R11 said that, because the funds are not infinite, top management must prioritise causing a partial neglect of investments that individual departments consider a priority:

*“I think a lot of these budgetary constraints are very frustrating because like my department got a [...] decrease in our budget for this year versus last year [...] so whenever you want to improve things, make things more efficient, more effective, there are already certain priorities on the funds that we currently have.” – R11*

The importance of prioritising to get funding was also mentioned by R4, R9, and R10, and was elaborated by R6 explaining that if the department’s budget is exceeded, there needs to be a request to the top management to increase the funds because it will impact the business’s financials. Hence, R4 described that the amount of funding that is decided by the top

management gets distributed according to the department's explanation of their investment needs, but that they will not always get what they ask for.

Furthermore, the respondents discussed whether the MNEs' global presence can help or hinder their digital journey. R1 described the challenges of getting inputs from various locations:

*“The strategies regarding what we develop, it's not that divided, but we get input from all different countries on what we need, but then it's more central how we connect it, what kind of strategy we should have. We cannot actually listen to everyone.”* – R1

Even though connecting all locations can be challenging, R3 and R10 asserted that it is beneficial to be present in multiple markets since it entails more customers and new knowledge that can help explore new value propositions. Extending this notion, R4 explained that it is difficult to maintain standardisation across the globe considering the organisation's size. R7 agreed that implementing organisation-wide changes in a global MNE will not entail one digital solution that suits all the different applications and needs. Instead, the result will be a “not-too-bad solution” for everyone to harvest the potential from DT since the definition of the right solution is different depending on the employees' needs.

Another determining characteristic of MNEs is their legacy. R11 claimed that it can bring challenges being an old company that uses old tools until forced otherwise by externalities. Furthering this, R7 mentioned the difficulties of the MNE's mindset when facing a change:

*“It is difficult if you are used to behaving in a certain way [...] and also because you usually promote people because of the conservative way of thinking, so you've got people in the top management positions because they are promoting the way to work that has previously made the company so successful. It's easier to change a start-up, for example, than to change like a Titanic ship that an old organisation is.”* – R7

The MNEs' history can therefore be a hindrance to transformation when their employees are not willing to change. R4 mentioned this and how that impacts their digital maturity:

*“I think overall we are perhaps a bit behind [in the digital journey] due to our legacy [...]. I think it's more difficult to transform such a company compared to a new start-up or a similar company with 10 years of legacy [...].”* – R4

Lastly, R7 suggested that technology itself is not the limiting factor, it is about the fundamental understanding that can make an organisation succeed in DT.

#### 4.4.2 Changes in Operations

This last section displays the theme of *Changes in Operations*. This theme includes three first-order concepts of *the organisation working in silos*, *the need for adjusting the organisational processes*, and *the importance of change management*.

One obstacle that was mentioned by R1, R3, R9, and R10 is that their organisations are working in silos and there exists fragmentation in the processes and knowledge exchange which makes it difficult to achieve the previously mentioned connectivity. While R7 noticed the importance of integrating systems, R10 emphasised the issue of silos:

*“The individual businesses are working on [digitalisation], but they’re still in silos. Everybody has the vision of where they want to go, but we’re not exactly all connected [...]. It’s [...] siloed and fragmented, and if there is an overarching [digital] strategy, I don’t know what it is. [...] So, how do you make these fragmented things all connect up and work? It’s just going to take some time and some tools and technology to get there.” – R10*

Again, R11 referred to the need for fundamental changes in the infrastructure to set the foundation for moving forward with connectivity. Extending this, R1 described that this requires a change in the way of working:

*“Every requirement has been defined digitally for a long time but has been in silos. [...] Now we’re trying to connect them but it’s difficult to be able to do it. I think that’s regarding digitalisation, it’s not just the tool itself but you need to build up the structure of how you manage data in the company. So that’s a huge work at the moment, to have the same language for everything.” – R1*

Therefore, there is a need to alter the fundamental organisational processes to advance in the DT journey. This is stated by R6 asserting that it is difficult to change how they work:

*“[...] I’m trying to create these standards for the technology and product development people, so they have a consistent way of working, a tool that connects the dots moving away from documents into more object-oriented, connected data.” – R6*

There is also a consensus between some interviewees about the need to implement new organisational processes to facilitate digitalisation. R4 and R8 explained that the process of doing physical tests needs to change into doing more simulation, as furthered by R2 who stated that the real DT happens when the ways of working have been changed so that assessments, explorations, and verifications can be made in the digital area. In line with this, change management was pointed out by R7, R8 and R9 as an important requirement for DT, where R7 described the significance of driving change:

*“[Digital transformation] is an all-encompassing change of the company as a whole and possibly also changes the company’s business models, and you can’t do that only by focusing on products or processes.” – R7*

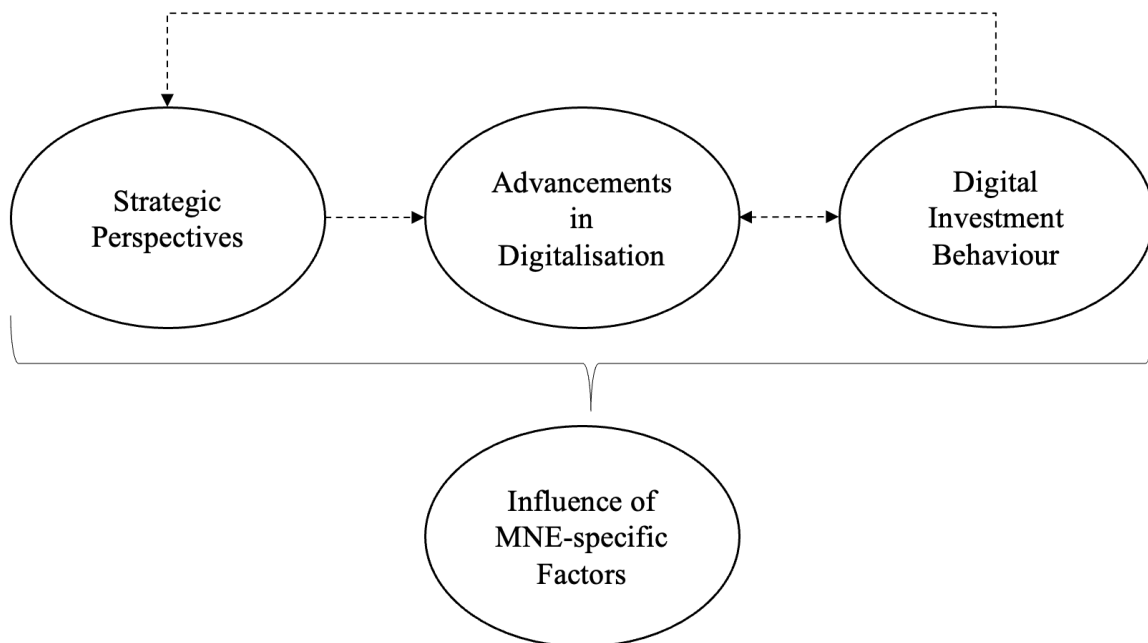
R7 also mentioned the importance of giving change management the same priority as implementing new digital technologies when the aim is to digitally transform since otherwise the knowledge will not be diffused. Moreover, R3 and R7 said that change management is crucial to empower and help employees to accept the changes imposed by digital initiatives. As summarised by R4, DT should be accompanied by transforming how organisations develop new products, solutions, or applications to successfully mature digitally.

#### 4.5 Synthesis of the Empirical Findings

Four aggregate dimensions emerged from the data analysis. Firstly, the strategies of MNEs are aimed at long-term value creation, revised according to changes in the external environment, and specified and communicated to each department. Secondly, with the strategic perspectives in mind, the digital leaders described the MNEs’ current advancement in digitalisation with a focus on innovative combinations of technologies, enabling connectivity, data management,

and implementing a robust infrastructure. Thirdly, the investment decisions for digital technologies are presented as business cases with a focus on growth and capability building to comply with digital advancements including mixed approaches to effective decision-making processes, shedding some light on the implementation process. Finally, the digital investments are anchored within the strategy to create alignment, and all three dimensions are influenced by MNE-specific factors concerning their organisational characteristics and the changes in operations that digitalisation implies. In line with the theoretical framework, the following analysis intertwines the four dimensions behind the MNEs' digital investment behaviour to show the relationships between them. The relationship between the aggregate dimensions is presented in Figure 6.

Figure 6: Relationship between the Aggregate Dimensions





## 5 Analysis

---

*The following section compares the findings to the current body of literature to further the understanding of the researched phenomenon. The analysis is divided into four parts, reflecting the structure of the empirical findings, by discussing the most important aspects of this research being dimensions of strategy, advancements in digitalisation, digital investment behaviour, and the influence of MNE-specific factors respectively.*

---

### 5.1 Strategic Perspectives

All the respondents play a crucial role in directing their organisations' DT journeys. However, the majority were found to not hold positions within the top management. Therefore, they do not necessarily participate in developing the corporate strategy (Grant, 2019), but rather initiate activities that support their divisions' business strategies to align with it. Thus, the subsections of this chapter intend to examine and discuss the respondents' understanding of and role in developing and communicating holistic strategic perspectives.

#### 5.1.1 Developing the Strategies according to Changes in Business Needs

It was explained by Gadde et al. (2003) and Grant (2019) that top management is responsible for revising and developing comprehensive strategies and is, thus, encouraged to embrace long-term views. These were identified to guide the more specific business strategies of the individual departments that, in turn, contribute to the corporate strategy. All respondents agreed with this course of action. Westerman et al. (2012) stressed that, to succeed within DT, top-down leadership and bottom-up innovation should ideally be combined but found that many organisations turn out to be too conservative or slow to realise this effectively, preventing themselves from progressing. Most respondents confirmed this, with R4 describing a "push and pull process", and further elaborating that their departments are provided the necessary freedom to adjust their initiatives and business strategies if they still align with and support the corporate strategy. On some occasions, the corporate strategy may even be updated if the bottom-up suggestions are significant enough.

Finally, the theoretical framework indicated that companies that reach a high level of strategic alignment outperform others due to a successful transformation of their business operations that is sourced from screening markets for emerging needs and digital technologies (Abareshi, 2011; Kiron et al., 2016; Kotusev, 2020; Mekonnen, 2022). R11 agreed with this view and elaborated on their respective screening process to create value for their customers. Therein, it can be said that digital leaders actively include digital components in their business strategies to align with their MNEs' corporate strategies.

#### 5.1.2 Long-term Aims of Value Creation

Apart from formulating the appropriate corporate strategy by the top management, its successful execution involves developing effective business strategies for the individual divisions, which is facilitated by employees on various levels with a shorter time horizon in mind (Teece, 2010; Teece & Petricevic, 2020). In this way, the whole organisation contributes to the corporate strategy. R2, R6, R8, and R10 accordingly stressed the importance of keeping

all employees in a communication loop about the ‘why’ and ‘how’ of the business operations to maintain a high level of motivation and cooperation amongst all levels.

As established by Porter (1980) and Grant (2019), strategic development facilitates an organisation’s vision and must, therefore, be supported by effective resource management. DT efforts significantly contribute to the integration of efficient operations and strategic alignment within value networks (Brown & Brown, 2019; Vial, 2019). This corresponds with the respondents’ common opinion to embrace standardisation to create operationally excellent foundations. Likewise, the strategic fit was found especially important in the literature to enhance the progress within DT. In that sense, digital leaders were considered effective in ensuring the consistent alignment of the strategies, the visions of the top-level management, and operational excellence throughout the organisation (Porter, 1980; Byrd et al., 2006; Abareshi, 2011; Grant, 2019). Accordingly, the respondents stated that they add value to their organisation firstly by introducing new digital trends and knowledge, and secondly by connecting employees throughout all hierarchy levels and departments to create synergies.

As it was outlined by Kiron et al. (2016), the adoption and integration of digital technologies serve to reconfigure operating models, thus, the value creation within an organisation’s respective supply chain, which was also emphasised by many of the respondents. Hence, the use of product offers is shifting from ownership towards accessibility (Parviainen et al., 2017; Saarikko et al., 2020), which makes it essential to convert existing value propositions into their digital variants to adhere to the new operating models and obtain as much competitive advantage as possible (Butt, 2020). Organisations can either optimise their existing operations or create new value propositions as was explained by Tekic and Koroteev (2019). Emerging from the findings, the respondents supported this perspective. With regards to this, strategic alignment is of particular significance as literature has mentioned that a DT strategy consists of approaches to use digital technologies and initiatives correctly to restructure business processes and create value (Hess et al., 2016; Jardak & Hamad, 2022). The respondents agreed with this view on creating the right infrastructure for their organisations. Fischer et al. (2020) and Saarikko et al. (2020) elaborated on a range of benefits stemming from the reconfigurations of business processes and models, which was also supported by the empirical findings.

One important external factor that the literature acknowledged is customer focus, which fundamentally serves an organisation to create a clear strategy and exploit opportunities of all kinds, not least through the deployment of digital technologies (Schwertner et al., 2017; Butt, 2020). While all respondents agreed with that statement, R2, R4, R6, R9, and R10 elaborated that the MNEs’ customers are on their own digital journeys and need as much assistance with it as their respective MNEs could provide. To this effect, the respondents’ understanding of DT was in accordance with the current literature that it is critical to maximise value creation and enable significant business improvements in customer experience as well as operating and business models (Albukhitan, 2020; Bican & Brem, 2020; Fischer et al., 2020; Singh et al., 2020). However, while the literature was mainly focused on knowledge-intensive innovation to enhance efficiencies and facilitate transformative changes (Buenstorf, 2016; Bican & Brem, 2020), the respondents mutually agreed that one of the most important focus areas was to increase sustainability measures themselves as well as to enable them for their customers.

Lastly, Christensen and Bower (1996) stressed the importance of analysing the external environment when creating the corporate strategy, which was endorsed by the respondents commenting on their consideration of declining overall growth rates or rather specified growth or focus areas as determinants of strategic value-added advancements. Thus, according to Byrd et al. (2016), particular attention to an organisation's objectives within its ecosystem is imperative to facilitate strategic alignment. The literature conformingly highlighted that strategic growth rates should always be balanced against market conditions and the organisation's respective aspiration to maximise value creation and increase operational efficiencies, as confirmed by the empirical findings.

### 5.1.3 Diffusing and Communicating the Corporate Strategy across the Organisation

In the literature, Zoppelletto et al. (2023) mentioned that it is essential for large organisations that the strategy is diffused to the departments to create understanding and acceptance as well as maintain a high level of alignment to improve performance. All respondents considered this an integral part of the actionable breakdown of the corporate strategy. However, they also noted that the more individual levels of communication the strategy goes through, the more room is created for interpretation and misalignment. Therefore, they emphasised the significance of a common language throughout the organisation to mitigate that risk. In accordance with this, the theoretical framework expressed the need for digital leaders to be strong communicators with a transformative vision that employees understand and feel empowered by (Westerman et al., 2012; Kiron et al., 2016; Wang et al., 2022). They were recognised as not only driving the development of the digital business strategy (Zoppelletto et al., 2023) but further implementing governance and a shared understanding between all employees, which was greatly supported by the empirical findings as well.

The nexus between strategic business efforts and digital efforts lies in maintaining high innovation spending to create a balance between short- and long-term objectives. That means allocating sufficient resources to DT efforts (Westerman et al., 2011; Schwertner, 2017). This is coherent with the answers of all respondents, where R2 furthered that this is necessary to bring the organisation to the leading edge in the chosen focus areas. Nevertheless, Liu et al. (2023) contradicted this stance, stating that managers might be biased to prefer short-term returns and, thus, undervalue long-term investments and their strategic importance. According to Liu et al. (2023), DT efforts do not only require large amounts of capital but also a longer time horizon before they start to pay off. That puts even more significance on excellent diffusion and communication of the strategy throughout the organisation.

## 5.2 Advancements in Digitalisation

Following the previous discussion on the impact of strategy on an MNE's DT journey, this section will relate it more specifically to practitioners' understanding of digital terminologies. The analysis further regards the digital progress MNEs' have made to date as well as the key efforts to be made to maintain competitive market positions in the future.

### 5.2.1 Status Quo of Digitalisation

In the theoretical framework, Fischer et al. (2020) and Saarikko et al. (2020) noted that the terminology concerning the distinct digital domains is used interchangeably by practitioners. This was supported by the respondents who mostly only referred to digitalisation. It was further established in the literature that, while both digitisation and digitalisation are vital elements of DT, digitisation is concerned with the conversion of analogue information into their digital representation, but digitalisation follows that initial step with creating new business processes and structures (Parviainen et al., 2017; Bican & Brem, 2021). The respondents were implicitly aware of this distinction but claimed it not to be important in their occupation. In addition, Blumquist et al. (2020) emphasised that only when organisations establish a foundation which makes data available in a digital form, can further digitalisation efforts be leveraged. In this way, digital infrastructure shapes new ways of working and enhances connectivity, which was recognised to “make the business fit for the future” which all respondents agreed with.

Scholars presented a differentiated view on innovation in digital technologies. On one hand, digital technologies were described as inherently disruptive bringing about breakthrough innovations (Brown & Brown, 2019; Tekic & Koroteev, 2019). On the other hand, it was stated that their power to transform or disrupt depends on the organisation’s ability to exploit the technologies’ potential (Hess et al., 2016; Kane et al., 2016; Saarikko et al., 2020). Nonetheless, the literature stressed their relevancy for structural transformations and re-designing business and operating models. In that respect, the importance of deploying digital technologies to explore novel configurations of their value networks was also evident in the empirical findings.

It was mentioned as equally crucial by Fitzgerald et al. (2013) and Singh et al. (2020) to provide employees with the right support to advance their knowledge and abilities. This was verified by the respondents stating it was important yet difficult to diffuse both new technologies as well as the required application knowledge throughout their organisations. Scholars stated that the density of information was increased by combining different tools in strategic ways to transform organisations and value networks, which ultimately alters communication and interaction patterns between the stakeholders (Tekic & Koroteev, 2019; Vial, 2019; Jedynek et al., 2021). While R7 gave the example of creating knowledge hubs to store and share information and best practices, the other respondents assented to the importance of learning from small projects before scaling them up.

Both Westerman et al. (2012) and Jardak and Hamad (2022) thoroughly explored digital maturity and concluded that it consists of high levels of digital investments aiming at transformational changes as well as extensive leadership capacities to facilitate DT. Likewise, effective mechanisms to coordinate investments stood out as important. Respectively, the respondents’ perception of their MNEs’ maturity was in line with theory and could be supported by the survey by Kane et al. (2015) which found most organisations to be in an early stage of digital maturity. The empirical findings concluded that, internally all organisations are more mature now than they were in the past. Within their competitive environment, however, they identified more mature focus areas compared to a lack of maturity in other areas. R7 agreed with Westerman et al. (2011) on the paradox that organisations generally see DT as an

urgent matter, but only a few of them act as first movers, while many lack the impetus and wait to follow, resulting in a slow transformation.

### 5.2.2 Future Efforts of Digitalisation

The literature asserted the importance of a well-defined digital strategy that is aligned with the corporate strategy, constituting a critical factor in maximising the value generated and added for DT (Butt, 2020; Kotusev, 2020; Mekonnen, 2022). However, the empirical findings showed that most respondents were not aware of an explicit digital strategy within their MNEs. Instead, they reported on working implicitly towards aligning their actions with the business and corporate strategy having digitalisation in mind. An ongoing focus area was reported to be the set-up and optimisation of the infrastructure as the backbone of any other advanced effort to facilitate seamless integration and connectivity. Contrastingly, a few respondents were aware of a clearly defined and explicit digital strategy within their organisation that allowed them to work towards a concrete direction, monitor their progress, and improve decision-making processes, as it was discussed by Schwertner (2017) and Brown and Brown (2019).

It was proven relevant in the literature that organisations must thoroughly understand the relevancy of DT to be able to profoundly transform (Hess et al., 2016, Fischer et al., 2020). The respondents agreed that their efforts lie in exploring possibilities to obtain the maximum level of integration. Complementing this view, connectivity was described in the theoretical framework as the enabler of value creation between all involved stakeholders (Parviainen et al., 2017) and the respondents admitted that their attention going forward must be on creating a structural foundation. Moreover, customer needs were acknowledged to determine the direction for adjustments in the value propositions. To reach this goal, researchers asserted that effective information flows and management are critical (Bican & Brem, 2020; Brown & Brown, 2020). The empirical findings support and further this by stressing the required ease of data processing into information flows as well as the effective sharing thereof. Additionally, the respondents explained that one way of doing so is through the application of simulation tools.

Finally, Geissbauer et al. (2016), Jardak and Hamad (2022), and Liu et al. (2023) emphasised digital capability building which requires continuously re-envisioning the DT journey and strategic alignment. Likewise, the respondents recognised that they need to strategically enhance their digital capabilities to acquire a competitive advantage and sustainably deliver value to their customers.

### 5.3 Digital Investment Behaviour

So far, the analysis has discussed the MNEs' formulation, diffusion, and communication of both the corporate and business strategies by exploring MNEs' current efforts to comply with their future aims of digital advancements. This section will analyse MNEs' digital investment behaviour by combining digital leaders' activities and actions of making investment decisions, considering their strategic perspectives and digitalisation advancement. Hence, the focus shifts towards examining the most important parts of MNEs' digital investment behaviour to achieve their digital ambitions while aligning the investments with the strategies.

### 5.3.1 Building a Business Case to Decide on Investments

The empirical findings showcased that investment decisions are usually based upon business cases where the associated costs and benefits are presented as well as the need for investing. Westerman et al. (2011) reported that this is one way to justify the investment decision by presenting its potential revenue gains and cost improvements. However, the interviewees emphasised that this justification can be challenging as the benefits of the investments can be hidden. This was described by researchers as solving business problems relating to current processes and resources by applying new technologies (Tekic & Koroteev, 2019) which the findings agreed with. Additionally, organisations identify focus areas based on corporate needs (Zoppelletto et al., 2023), where the interviewees mentioned that employees express their needs for new investments upon which decisions are based.

Because digital technologies provide the benefits of detecting and reacting to the complexity of an organisation's environment and digital leaders' responsibilities are to respond to disruptions from digital trends (Kane et al., 2015; Kiron et al., 2016; Tekic & Koroteev, 2019; Vial, 2019), the interviewees emphasised that they invest in digital technologies based on their conducted trend analysis. This is also connected to formulating the corporate strategy since industry and market analyses are important strategic components (Grant, 2019). In addition, the respondents mentioned scenario planning as a way to decide on investments by identifying areas of high potential and benchmarking against competitors. Lastly, both the literature and the findings mentioned customer needs as an important determinant for new investments in digital technologies and for strategy adaptation.

Since companies need to ensure that the investments will pay off, the respondents highlighted that they link the investment to critical processes to secure the funding and implement requirements for the technology which is a crucial step in assessing the economic viability of digital technologies. Following Westerman et al. (2012) who argued that digitally mature organisations strongly engage in aligning digital investments along a common direction, leading to higher revenues from these investments, the respondents assure that the digital investments clearly and explicitly coordinate with the MNE's strategic ambitions. In other words, digital investments require strategic alignment to facilitate high levels of ROIs and optimised operations. Combining both the literature and empirical findings, it can be said that organisations that want to advance in their digital journey make long-term strategic decisions about future scenarios (Tekic & Koroteev, 2019; Saarikko et al., 2020). Only by justifying and promoting the contributions to the MNEs' strategic ambitions and overall success will the investment be made.

### 5.3.2 Decisions Based on Digital Growth and Capability Building

Kane et al. (2015) and Brown and Brown (2019) outlined that digital leaders' most important characteristic is to embrace the investment of digital technologies for the organisation's future growth in accordance with the corporate strategy, indicating strategic alignment and the empirical findings confirmed this. Even so, researchers mentioned that digital investments are aimed at allocating resources to processes enabling DT grounded in their potential value (Westerman et al., 2011; Schwertner, 2017). The interviewees extended this by asserting that

these investments must be prioritised according to their strategic importance due to the MNEs' limited resources.

As explained by the respondents, proving the digital technology's feasibility makes the investment more compelling, leading to a higher chance to secure funding. However, the literature asserts that this entails difficulties since feasibility requires considerations of the investment's expandability because organisations progress in their digital journey by scaling and building capabilities (Joppen et al., 2019; Wang et al., 2022), which the respondents were aware of. Therefore, as previously mentioned, most interviewees explained that investments are focused on a small area. Proving the technology's ability to achieve strategic progress through enhanced scalability and holistically assessing its benefits can strengthen the organisation's investment behaviour.

Another aim of investments in digital technologies that is agreed upon by both the literature and the empirical findings are better and faster decision-making processes and an increase in the organisation's knowledge of its customers and potential capabilities (Westerman et al., 2011; Vial, 2019). The interviewees explained that their current aim is to have the decision-making processes be based on available information from various databases and highlighted the issue of connectivity. Still, investments in the infrastructure are needed to make better-informed decisions, fostered by capability and competency building.

Because the real value for DT stems from the continuous re-envisioning of how digital technologies can extend and build capabilities to enable value creation, digital leaders advance strategic investments by consecutively directing them towards foundational capabilities (Westerman et al., 2012; Wang et al., 2022). The respondents strengthened this by claiming that investments in foundational capabilities enable their divisions to improve product development and deliver on the corporate strategy. The literature suggested that closer strategic alignment allows organisations to better leverage their digital investments which result in strengthened capabilities that holistically exploit digital technologies (Byrd et al. 2006; Westerman et al., 2011; Jardak & Hamad, 2022). In this regard, the respondents argued that they try to anticipate future technologies and understand improvements in digital activities to support the strategy.

### 5.3.3 Mixed Approaches of Making Investment Decisions

The empirical findings highlighted three main decision-making approaches to digital investments in detail. Firstly, central decision-making usually occurs when top management needs to ensure that the investment is aligned with the corporate strategy while meeting the divisions' flexibility to align their strategic activities upward. Nonetheless, the respondents noted that this decision-making process requires strong communication and persuasion to make the necessary investments.

Secondly, in accordance with the literature stating that large organisations deploy decentralised decision-making processes to match the organisation's strategy (Zoppelletto et al., 2023), the respondents identified this to tailor investments to the specific needs of each department. Thus, an important element in this approach is the top management's establishment of a clear strategic direction and coordination to ensure a holistic strategic alignment. Therefore, digital

leaders should enhance the coordination across digital investments to allow for in-time and accurate investment decisions (Westerman et al., 2012; Wang et al., 2022; Zoppelletto et al., 2023) which the findings confirmed by furthering that decentral investment decisions can be made if they are connected to the existing systems.

Lastly, the respondents brought up joint decision-making. The theoretical framework suggested that including managers in top-level strategies and increasing their involvement in digital activities leads to better execution of digital investments and supports strategic alignment (Byrd et al., 2006; Abareshi, 2011). The same was concluded by the interviewees stating that this approach can aid the corporate strategy through the sharing of opinions about the requirements an investment should fulfil. Although the literature focused on digital leaders' action of establishing a shared understanding between employees, it does not relate to investment decisions. Instead, the findings showed that exchanging knowledge and best practices can ensure the most optimal investment decisions. Nevertheless, joint decision-making enables the exploration of synergies between stakeholders.

#### 5.3.4 Types of Investments in Digital Tools and Technologies

As expressed in the theoretical framework, making investments to build capabilities can accelerate the DT journey which the interviewees specified to be investments in R&D, software, hardware, and equipment. The role of digital leaders in acknowledging different adaptations of digital technologies further signifies the respondents' notion of investing in the infrastructure to build capabilities, deliver better customer experience, and achieve higher performance. Yet, the investment alone is not sufficient since the technologies must be capable of supporting each other and be seamlessly integrated. This is asserted in the literature and extended in the findings as organisations should identify relevant technologies based on their substantial integration possibilities while assessing the existing processes.

Even though researchers mentioned that digitalisation efforts can enhance connectivity (Parviainen et al., 2017; Fischer et al., 2020), they failed to mention what the findings recognised as the relationship between integration and infrastructural platforms to achieve such connectivity. R6 pointed out that the foundation must be changed before integrating new technologies. Still, the investments' success will depend on organisational change and not the technology itself. Ultimately, both the literature and the interviewees stressed that having access to the right tools and finding all available information in the right context are important determinants for knowledge creation and capability building.

#### 5.3.5 Implementation Process of the Investment

The existing literature established that one crucial element of digital investments is its successful implementation (Wang et al., 2022) as agreed upon by the respondents. Digital technology alone adds no value to an organisation since its integration and application are the principles for value creation (Vial, 2019). However, implementing digital technologies can be challenging as it can demand organisational adjustments. This was detailed by the respondents saying that the integration becomes even more important if the investment will be diffused, organisation-wide application knowledge is required, or the investment relates to connectivity.



Evident in the literature and the findings were the difficulty of quantitatively measuring the investment's impact. Organisations can struggle in obtaining value from these investments since their value is not instantaneous, and their ROIs accrue in the long term (Abareshi, 2011; Jardak & Hamd, 2022; Liu et al., 2023). Extended by R7, showcasing an investment's impact is difficult in the short term, resulting in challenges when building the business case. Notably, managers' bias towards preferring short-term returns over long-term benefits was specified by Liu et al. (2023) but argued against by the respondents who expressed their preference for continuous investments. Though the literature stated that digital investment behaviour can be sustained by building performance indicators to measure success (Wang et al., 2022), it fails to explain how to do so, which the respondents emphasised to be difficult. Additionally, while digitally mature organisations are better at deriving value from investments in digital solutions, the interviewees stressed that there are insufficient measuring techniques for doing so. Despite that, specified both by current literature and the respondents, when the investment aims at increasing efficiency or eliminating costs, its success is easier to measure.

#### 5.4 Influence of MNE-specific Factors

Formerly, the MNEs' digital investment behaviour has been established in accordance with their digital maturity and initiatives, as well as their development of the strategies and the digital leaders' decision-making processes. Thus, the analysis has so far focused internally on the organisation and will now shift towards discussing external factors that can impact and influence these constitutional processes.

##### 5.4.1 Characteristics of MNEs

Although not fully acknowledged by existing literature, the empirical findings showcased the impact of the characteristics of MNEs. On one hand, scholars stated that DT is influenced by the organisation's structure, processes, and strategies. On the other hand, the respondents specified that the opposite is also true in terms of the structure's impact on DT efforts. It positively influences the company in that they can holistically see the digital growth efforts, yet the divisional structure challenges the adaptation to external and internal changes.

Moreover, Wang et al. (2022) mentioned that the divisions face budgeting issues due to the large amounts of capital required for digital investments, and the respondents furthered that top management must prioritise between necessary investments. Surely, organisations can be constrained by the drive of different priorities (Liu et al., 2023). The interviewees agreed with this by stating that the amount of funding is based on the divisions' investment needs, but that some of them get neglected by the top management.

As identified by the respondents, MNEs' global presence influences their digital journey. This presence can be positive in the sense that MNEs acquire new knowledge from customers, but it can be challenging to apply to product development. Contrasting the literature on standardisation is a key element for increasing compliance from digitalisation (Parviainen et al., 2017), the respondents expressed their concerns about standardising tools, systems, and processes across the globe since there cannot be one established solution that satisfies all needs.

The findings also highlighted the MNEs' incumbency has an impact on their investment behaviour. Specified both in the literature and findings, digital leaders play an important role in developing a digital mindset within their organisation, which R7 pointed out as a difficulty when there exists an established way of working that has led the organisation to success. Thus, the MNE's legacy and history can be a hindrance in transforming the organisation, which can negatively impact its digital maturity. Indeed, R4 emphasised that the MNE is lagging in their digital journey because changing a well-established organisation is more difficult compared to a company with less history. In relation, resistance to change was pointed out as a limiting factor by both existing literature and the interviewees. Furthermore, Hess et al. (2016) described that structural transformations can be enhanced only if the organisation fundamentally understands digital technologies, which was confirmed by the respondents.

#### 5.4.2 Changes in Operations

Observed in the literature is the risk of making digital investments for isolated use, leading to fragmented areas and the overestimation of results (Westerman et al., 2011; Tekic & Koreteev, 2019), which can be related to the finding of MNEs' working in silos with fragmented processes that presents more challenges to the apparent need for connectivity. The literature suggested that organisations can adapt and streamline processes to digitally advance, where the respondents agreed but stressed that fragmentation and the need for heavy funding prevent this. Since success in DT depends on driving organisational change, change management and empowering employees should be given the same priority as investing in new digital technologies. Accordingly, the importance of implementing new organisational processes and changing existing ones is well emphasised by both the theoretical framework and the respondents.

### 5.5 Synthesis of the Analysis

The four preceding sections have extensively discussed existing knowledge and novel findings around the facilitation of MNEs' digital investment behaviour. This regards advancements in their DT journey as well as the effective alignment with their business and corporate strategies. It has been demonstrated that the current body of literature and empirical findings agree for the most part. However, in some instances, they extend or contradict each other which is further highlighted in this section.

Concerning the strategic perspectives, the empirical findings validated an appropriate understanding of both the organisations' corporate and business strategies as well as the need to align them to accomplish the MNEs' visions. Notwithstanding that digital efforts play a significant role in facilitating this, the empirics showed that explicitly stated digital strategies are not common. More so, they were found to implicitly impact all efforts taken towards advancing the MNEs, and, thus, were unintentionally incorporated into their strategies. The most significant outcomes of this revolved around acknowledging the importance of transparent communication between all stakeholders for strategic developments with the common goal of sustainable value creation.

Evaluating the advancements in their digital efforts, the MNEs' current states were presented in accordance with the literature, meaning that most digitisation efforts have been completed

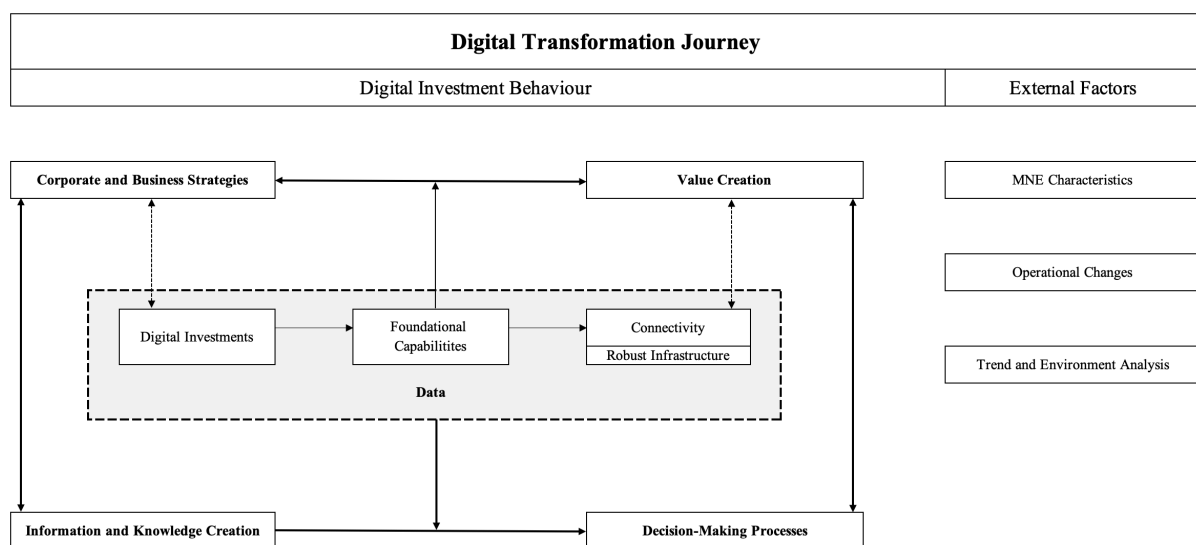
to date. Nevertheless, looking at the digitalisation progress, the findings demonstrated a fragmented landscape with no definitive answers about digital maturity. The empirics rather highlighted different levels of maturity within individual MNEs. The most important requirements for advancing were recognised to be (1) the integration of existing infrastructures while assuring that new investments could be easily connected in the future, and (2) efficient capability and knowledge building and management, which will experience a heavy shift towards simulation in the future.

Regarding the MNEs' investment behaviour, the literature has stressed the importance of digital leaders and investment decisions concerning an organisation's digital maturity. The empirical findings have detailed this by specifying how digital leaders facilitate these investments by exemplifying their concrete actions when building a business case for digital growth and capability building. In addition, the findings also highlighted the MNEs' approaches to decision-making connected to the types of digital investments made and the significance of their integration and implementation.

Moreover, the empirical findings extended existing knowledge by establishing external factors that influence and impact the MNEs' digital investment behaviour. These are external in the sense that they are not directly connected to the organisation's strategies, digital efforts, or investment behaviour. The factors present themselves in the forms of changes to existing organisational processes or the implementation of such, the characteristics specific and centric to MNEs, and the analysis of trends or changes in the external environment.

Ultimately, the novel findings and existing literature can be combined into the following framework representing the most important elements in digital leaders' facilitation of MNEs' digital investment behaviour as part of their ambition to advance in their DT journey, shown in Figure 7.

Figure 7: Framework Facilitating Digital Investment Behaviour



Considering the framework, an *organisation's DT journey* consists of two parts from the digital leaders' perspective. *External factors* represent more peripheral considerations to the investments that emphasise change management as a determinant of their integration and implementation. The *digital investment behaviour* of the MNEs consists of four interrelated parts. Firstly, *corporate and business strategies* are impacted by the level of *information and knowledge creation* in the MNE as well as its vision for *value creation*. This, in turn, is aided by well-informed and efficient organisation-wide *decision-making processes* to achieve *connectivity* that relies on a *robust infrastructure*. These decisions, however, can only be improved by creating the appropriate information and knowledge. The *digital investments* must be anchored in the strategies and should aim at building and improving both dynamic and digital *foundational capabilities*. Capabilities, in turn, contribute to establishing both a *robust infrastructure* and *connectivity*. Finally, *data* is at the core of all these activities and decisions, thus, constitutes a strategic asset.

## 6 Conclusion

---

*This last section answers the research question according to the findings and analysis, presents the managerial and theoretical implications of this study, and identifies the research's contributions as well as limitations to provide directions for further research.*

---

### 6.1 Answering the Research Question

This study aimed at investigating how digital leaders facilitate MNEs' digital investment behaviour to advance their organisations in their DT journey while aligning these with the corporate strategy. For this purpose, the following research question was stated:

*How do digital leaders facilitate MNEs' digital investment behaviour to advance in the digital transformation journey while aligning with the corporate strategy?*

To answer the research question, eleven semi-structured interviews were conducted in six MNEs that operate within the Nordic industrial goods sector. The interviews consisted of seven managers and four executives taking on responsibilities as digital leaders within their respective organisations. The findings were analysed concerning the underlying behaviours and actions of these digital leaders and MNE-specific characteristics when institutionalising digital investments to facilitate DT, as well as adjacent literature concerning the perspectives on strategy and approaches to digital investments.

Based on the theoretical framework and the empirical findings, this thesis proposes the following conclusions. Firstly, on a broader level, digital leaders create and foster an alignment between the corporate strategy and their digital efforts to establish transparent communication between all stakeholders when assisting in a holistic understanding of the MNE's vision at all hierarchical levels. Secondly, digital leaders continuously assess the status quo of their digitalisation efforts to have an overview of the MNE's current and future digital advancements by constructing roadmaps of how they can increase the MNE's digital maturity levels. Thirdly, digital leaders ensure that all investments made in digital technologies are anchored in the MNE's corporate strategy by justifying it accordingly with its feasibility and scalability. Thereafter, digital leaders need to guarantee a seamless integration and implementation of the investments by building the required capabilities, adjusting the operational processes, and creating the appropriate knowledge. Thus, these leaders have the overall responsibility of adapting the organisational environment to fit the digital investment accordingly. Finally, the facilitation is also impacted by the identified MNE-specific factors which they must consider before the investment decision with an emphasis on managing organisation-wide change.

To conclude, digital leaders facilitate the MNEs' digital investment behaviour by ensuring a fundamental understanding of the organisations' digital efforts when making investments aimed at DT while simultaneously fostering the strategic alignment between the corporate strategy and digital advancements towards long-term value creation.

## 6.2 Theoretical and Managerial Implications of the Study

This study suggests several implications for theory regarding the research topic. The research gaps of insufficient frameworks on DT journeys particularly within the industrial goods sector, inadequate explanations considering digital investments' support of MNEs' strategies, and unclear representation of the decision-making process behind these investments were presented. Thus, this research has moved existing literature into deeper dimensions by filling these gaps and reinforcing these concepts through the novel conclusions of digital leaders' facilitation of organisations' digital investment behaviour and their actions taken to align them with strategic ambitions. Moreover, it brings attention to digital leaders' roles in driving digital initiatives and the ultimate decision-making processes for investments in digital technologies.

Different to antecedent research that has focused on DT aspects, digital investments in technologies, and the characteristics of digital leaders separately, this study highlighted DT mechanisms by combining all aspects and providing new insights. The identification of digital leaders' facilitation of the investments led to a framework that provides a holistic overview of how MNEs advance in their DT journeys. This research sheds new light on digital investment behaviours within MNEs manufacturing industrial goods, where the specified responsibilities of digital leaders have a critical impact on investment processes.

Overall, this research contributes to the theoretical understanding of digital leaders as key actors in the decision-making process of digital investments within MNEs. It identifies central activities which enable the alignment between the corporate and business strategies, and organisational digital investment behaviour leading to advancements in the DT journey. In this way, the study unravels the importance of digital leaders and the strengthening of digital investment behaviour in these organisations' DT journeys.

In addition, four important managerial implications, that are in full alignment with the theoretical framework, can be drawn for managers and executives acting as digital leaders within their organisations. These recommendations can aid them in furthering their MNEs' DT journey through effective knowledge management, sustainable capability building, and the creation and strengthening of connectivity.

Before implementing new digital technologies separately in individual divisions which could lead to further fragmentation and more silos, it is crucial to take a step back and assess the current foundational structure of the organisation. Digital leaders must understand the legacy of their MNE and consider its history when guiding it towards DT. If not understood thoroughly and considered for strategic development, the context of an organisation may hinder any effort that requires changes in its structure, processes, and way of working. This includes the full integration and streamlining of existing processes, structures, and tools before adding new digital investments. The most fundamental change a digital leader must work towards is to achieve connectivity throughout the MNE as well as its respective value network. That, in turn, requires the creation of the right environment to accept and embrace changes and forward-thinking and must be considered a continuous improvement process itself. One key area to start with could be the assessment of the current data management processes which might help to find solutions that are standardised enough to be handled in MNEs, yet flexible enough to be applicable within the individual divisions. Since many silos and the high level of fragmentation

are rooted in the divisional organisational structures of MNEs, it is essential to mind this characteristic when working towards organisational change.

Moreover, digital leaders can be the ones to assess the importance of having an explicitly stated digital strategy. Time and resources should be freed up to contemplate whether to have a digital strategy that aligns with the corporate strategy. While in some cases that makes sense, in other cases, it proves effective to simply create awareness of the subject when working towards the vision within the organisation. In that sense, the significance of digital leaders does not lie in possessing all the technical expertise when it comes to the MNEs' DT journey. Rather, they work towards creating the right environment to absorb the potential stemming from strategic investments in digital technologies to lead their organisations on a sustainable and competitive DT journey.

### 6.3 Limitations

This research accepts the fact that there are some limitations to the study. The first limitation considers the possibility of investigator and response biases based on the abductive nature of this study. These biases may be present in the data collection and data analysis processes as previously stated. Additionally, the researchers explained that investigator triangulation has been thoroughly performed and addressed the mitigation of these biases in sections 3.5.2 and 3.6. Despite this, it should be mentioned that the researchers' similarity in academic backgrounds might have influenced the data analysis, and even if the researchers have to the best of their ability mitigated response bias, it could not be guaranteed.

The second limitation concerns the sample and the sample size. The study has showcased an explicit definition of a digital leader in terms of characteristics, behaviours, and actions which was applied during the sampling procedure as explained in section 3.5.1. However, it is noteworthy that this definition is subjective since it is based on the respondents' perceptions, thus, the interviewees are not objectively assured to be digital leaders and more digital leaders can be present in these MNEs. Additionally, the theoretical framework has explicitly presented the new C-level position of the CDO as a leader of organisation-wide DT initiatives and activities. Even though the sample consisted of four executives in the top management of their MNEs, there were no CDOs interviewed due to unavailability. Still, the researchers re-assured the definition of digital leaders based on the interviewees' responsibilities and titles in the respective MNEs as highlighted in section 3.5.1.

Regarding the sample size, it should be noted that while eleven interviews in six MNEs provided an in-depth understanding of digital leaders' facilitation of MNEs' digital investment behaviour, there may be more actions and activities included in the decision-making processes, alignment with the corporate strategy, and advancements in digitalisation which were not explicitly stated by the interviewees. Nevertheless, the sample size was regarded as sufficient for this research's purpose since code saturation was reached at the tenth interview, also stated in section 3.6. In addition, previous academic research has confirmed that a sample size of eleven semi-structured interviews can generate robust and rich findings, which is assumed legitimate for this research as well.

The last limitation regards the transferability of this study. This research's generalisability has been demonstrated in section 3.7 in terms of displaying as many details as possible regarding the selection of the sample, the sampling procedure, and the research process. Yet, its empirical findings and presented framework of MNEs' digital investment behaviour should be applied to different settings to validate whether they hold and can be generalised to other research contexts, which is explained in the following section.

#### 6.4 Direction for Further Research

Per this study's findings and its outlined limitations, several directions for further research can be provided. Since most of the current knowledge regarding this research topic consists of qualitative studies, case studies and quantitative work, such as examining specific investments, could generate new insights going forward. Case studies could be beneficial by providing deeper insights into the organisational processes on multiple hierarchical levels to investigate whether this study's findings and framework hold. Quantitative studies could provide specific insights into the types of investments made by MNEs, thus, generating a richer context for digital investments and organisations' advancements in their DT journey. Contrastingly, it could also be valuable to examine individual organisations' investment behaviour through longitudinal case studies. Thereby, a more in-depth understanding of the structure of investments in digital technologies could be generated.

Another area for further research could be the need for assessing the C-level positions in these MNEs. Existing literature has mentioned the newly established role of CDOs who are explicitly focusing on delivering applications, infrastructures, and projects to lead organisation-wide DT initiatives. Nevertheless, due to their unavailability for this study, their role in the MNEs' digital investment behaviour remains unstudied and could therefore be a subject for further research within this context.

Even though the scope of this research was within investments in digital technologies, the interviewees had a great focus on capability building and they extensively discussed organisation-wide change, which is crucial in transforming MNEs in any way. Therefore, another subject for further research regarding DT could be the investigation of aligning these specific digital investments with change and knowledge management by focusing on investments in the workforce and training of employees.

Concerning strategy development, the current literature focuses on explicit digital and digital transformation strategies that must be aligned with the corporate strategy. However, it is evident from this study that practitioners from MNEs acting within the industrial goods sector in the Nordics do not follow this theoretical approach. Consequently, it could be insightful to investigate if or under which conditions practice aligns with the theory. Therefore, the same study could be reproduced for other types of organisations or industries to validate the findings in terms of explicit digital strategies.



## References

- Abareshi, A. (2011). The antecedents of IT-business alignment in manufacturing firms. *International Journal of Business Information Systems*, 8(3), 322.
- Albukhitan, S. (2020). Developing Digital Transformation Strategy for Manufacturing. *Procedia Computer Science*, 170, 664–671.
- Anney, V. N. (2014). Ensuring the Quality of the Findings of Qualitative Research: Looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*. 5(2), 272-281.
- Avison, D. E., Jones, J. B., Powell, P., & Wilson, D. (2004). Using and validating the strategic alignment model. *Journal of Strategic Information Systems*, 13(3), 223–246.
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.
- Bedenik, N. (2015). The Challenge of Controlling. *International Journal of Industrial Engineering and Management*, 6(4), 153.
- Bell, E., Harley B. & Bryman, A. (2019). *Business Research Methods*, 5th Edition. Oxford University Press: Oxford.
- Bican, P. M., & Brem, A. (2020). Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is There A Sustainable “Digital”? *Sustainability*, 12(13), 5239.
- Bitsch, V. (2005). Qualitative research: A grounded theory example and evaluation criteria. *Journal of Agribusiness*, 23(1), 75-91.
- Blumquist, T., Da Silva, C., Kinsey, J., & Reiner, C. (2020). Digitalization and energy: A survey on the impact of digital transformation on energy consumption and efficiency. *Renewable and Sustainable Energy Reviews*, 134, 110253.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Brown, N., & Brown, I. (2019). From Digital Business Strategy to Digital Transformation – How? A Systematic Literature Review. *SAICSIT '19: Proceedings of the South African Institute of Computer Scientists and Information Technologists*, 13, 1-8.
- Buenstorf, G. (2016). Schumpeterian incumbents and industry evolution. *Journal of Evolutionary Economics*, 26, 823–836.

- Burgelman, R., Christensen, C., & Wheelwright, S. (2004). *Strategic management of technology and innovation* (4.th ed.). Boston: McGraw-Hill/Irwin.
- Burger, M., Kessler, M., & Arlinghaus, J. (2021). Aiming for Industry 4.0 Maturity? The risk of higher digitalization levels in buyer-supplier relationships. *Procedia CIRP*, *104*, 1529–1534.
- Butt, J. (2020). A Conceptual Framework to Support Digital Transformation in Manufacturing Using an Integrated Business Process Management Approach. *Designs*, *4*(3), 17.
- Byrd, T. A., Lewis, B. E., & Bryan, R. M. (2006). The leveraging influence of strategic alignment on IT investment: An empirical examination. *Information & Management*, *43*(3), 308–321.
- Chesbrough, H. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, *43*(2), 354-363.
- Christensen, C., & Bower, J. (1996). Customer Power, Strategic Investment, And the Failure of leading Firms. *Strategic Management Journal*, *17*(3), 197-218.
- Cho, Y. (2022). Comparing Integrative and Systematic Literature Reviews. *Human Resource Development Review*, *21*(2), 147–151.
- Collis, J., & Hussey, R. (2014). *Business research: a practical guide for undergraduate & postgraduate students* (4th ed.). Palgrave Macmillan.
- Dunning, J., & Lundan, S. (2008). *Multinational Enterprises and the Global Economy* (2nd Edition). Northampton: Edward Elgar Publishing Limited.
- Duraivelu, K. (2022). Digital transformation in manufacturing industry – A comprehensive insight. *Materials Today: Proceedings*, *68*, 1825-1829.
- Engesmo, J., & Panteli, N. (2019). Chief Digital Officers as Protagonists in Digital Transformation. *Digital Transformation for a Sustainable Society in the 21st Century*, 730-737.
- Esmaeilian, B., Behdad, S., & Wang, B. (2016). The evolution and future of manufacturing: A review. *Journal of Manufacturing Systems*, *39*, 79-100.
- European Commission. (2018). *ENTR/E4-Fuelling Digital Entrepreneurship in Europe*. Background Paper; European Commission. Retrieved February 15, 2023, from [http://ec.europa.eu/ DocsRoom/documents/5313/attachments/1/translations](http://ec.europa.eu/DocsRoom/documents/5313/attachments/1/translations).

- Fischer, M., Imgrund, F., Janiesch, C., & Winkelmann, A. (2020). Strategy archetypes for digital transformation: Defining meta objectives using business process management. *Information & Management*, 57(5).
- Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2013). Embracing Digital Technology. *MIT Sloan Management Review*. Retrieved February 20, 2023, from <https://sloanreview.mit.edu/projects/embracing-digital-technology/>.
- Gadde, L., Huemer, L., & Håkansson, H. (2003). Strategizing in industrial networks. *Industrial Marketing Management*, 32(5), 357-364.
- Geissbauer, R., Vedso, J., & Schrauf, S. (2016). *Industry 4.0: Building the digital enterprise*. PWC, *Global Industry 4.0 Survey 2016*. Retrieved February 15, 2023, from <https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf>
- Gill, S. (2020). Qualitative Sampling Methods. *Journal of Human Lactation*, 36(4), 579–581.
- Ghobakhloo, M. (2018). The future of manufacturing industry: A strategic roadmap toward Industry 4.0. *Journal of Manufacturing Technology Management*, 29(6), 910-936.
- Grant, R. (2019). *Contemporary strategy analysis* (Tenth ed.).
- Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Technology Research and Development*, 29(2).
- Hambrick, D., Fredrickson, J., & James W. Frederickson. (2005). Are You Sure You Have a Strategy? *Academy of Management Perspectives*, 19(4), 51-62.
- Hess, T., Matt, C., Benlian, A., & Wiesböck, F. (2016). Options for Formulating a Digital Transformation Strategy. *MIS Quarterly Executive*, 15(2), 103-119.
- Hill, C. W. L., Schilling, M. A., & Jones, G. R. (2019). *Strategic Management: An Integrated Approach, Theory & Cases*. South-Western College.
- Hu, Y., Che, D., Wu, F., & Chang, X. (2023). Corporate Maturity Mismatch and Enterprise Digital Transformation: Evidence from China. *Finance Research Letters*, 103677.
- Jardak, M. K., & Hamad, S. B. (2022). The effect of digital transformation on firm performance: evidence from Swedish listed companies. *The Journal of Risk Finance*, 23(4), 329–348.

- Jedynak, M., Czakon, W., Kuźniarska, A., & Mania, K. (2021). Digital transformation of organizations: what do we know and where to go next? *Journal of Organizational Change Management*, 34(3), 629–652.
- Johnston, C. (2021). *What Is the Industrial Goods Sector?* The Balance. Retrieved January 3, 2022, from <https://www.thebalancemoney.com/what-is-the-industrial-goods-sector-5201930>
- Joppen, R., Lipsmeier, A., Tewes, C., Kühn, A., & Dumitrescu, R. (2019). Evaluation of investments in the digitalization of a production. *Procedia CIRP*, 81, 411–416.
- Kane, G.C., Palmer, D., Phillips, A.N., Kiron, D., & Buckley, N. (2015). *Strategy, not Technology, Drives Digital Transformation, Becoming a digitally mature enterprise* [Online]. MIT Sloan Management Review.
- Kiron, D., Kane, G., Palmer, D., Phillips, A.N., & Buckley, N. (2016). *Aligning the Organization for its Digital Future* [Online]. MIT Sloan Management Review. Deloitte.
- Kotusev, S. (2020). The Hard Side of Business and IT Alignment. *IT Professional*, 22(1), 47–55.
- Krefting, L. (1990). Rigor in qualitative research: the assessment of trustworthiness. *The American Journal of Occupational Therapy*, 45(3), 214–222.
- Lee, H., Song, J., Min, S., Lee, H., Song, K., Chu, C., & Ahn, S. (2019). Research Trends in Sustainable Manufacturing: A Review and Future Perspective based on Research Databases. *International Journal of Precision Engineering and Manufacturing - Green Technology*, 6(4), 809-819.
- Lee, C. H., Liu, C. L., Trappey, A. J., Mo, J. P., & Desouza, K. C. (2021). Understanding digital transformation in advanced manufacturing and engineering: A bibliometric analysis, topic modeling and research trend discovery. *Advanced Engineering Informatics*, 50, 101428.
- Lincoln, Y.S., & Guba, E.G. (1982). *Establishing Dependability and Confirmability in Naturalistic Inquiry Through an Audit*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.
- Liu, Z., Zhou, J., & Li, J. (2023). How do family firms respond strategically to the digital transformation trend: Disclosing symbolic cues or making substantive changes? *Journal of Business Research*, 155, 113395.
- Lööf, H., Heshmati, A., Asplund, R., & Nääs, S-O. (2001). *Innovation and performance in manufacturing industries: A comparison of the Nordic countries*. SSE/EFI Working Paper

Series in Economics and Finance, No. 457, Stockholm School of Economics. The Economic Research Institute (EFI), Stockholm.

- Magnusson, J., Elliot, V., & Hagberg, J. (2022). Digital transformation: why companies resist what they need for sustained performance. *Journal of Business Strategy*, 43(5), 316–322.
- Matt, C., Hess, T., & Benlian, A. (2015). Digital Transformation Strategies. *Business & Information Systems Engineering*, 57(5), 339–343.
- Mekonnen, J.G. (2022). *IT Alignment: A Management Paradigm for Digital Transformation in Public Organisations*. 21st International Conference on Perspectives in Business Informatics Research (BIR 2022), September 20-23, 2022, Rostock, Germany.
- Mellahi, K., Meyer, K., Narula, R., Surdu, I., & Verbeke, A. (2021). *The Oxford Handbook of International Business Strategy*. Oxford: Oxford University Press, Incorporated.
- Mintzberg, H., & Lampel, J. (1999). Reflecting on the strategy process. *Sloan Management Review*, 40(3), 21.
- Mudambi, R. (2020). *Location and International Strategy Formation: A Research Agenda in* Mellahi, K., Meyer, K., Narula, R., Surdu, I., & Verbeke, A. (2021). *The Oxford Handbook of International Business Strategy*. Oxford: Oxford University Press, Incorporated.
- OECD. (2020). A roadmap toward a common framework for measuring the Digital Economy. In <https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>. Retrieved February 16, 2023, from <https://www.oecd.org/sti/roadmap-toward-a-common-framework-for-measuring-the-digital-economy.pdf>.
- O'Reilly III, C., & Tushman, M. (2004). The Ambidextrous Organization. *Harvard Business Review*, 82(4), 74-140.
- Ozcan, P., & Yakis-Douglas, B. (2020). *Digitalization and its Strategic Implications for the Multinational Enterprise: The Changing Landscape of Competition and How to Cope with It* in Mellahi, K., Meyer, K., Narula, R., Surdu, I., & Verbeke, A. (2021). *The Oxford Handbook of International Business Strategy*. Oxford: Oxford University Press, Incorporated.
- Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the digitalization challenge: how to benefit from digitalization in practice. *International Journal of Information Systems and Project Management*, 5(1), 63–77.
- Porter, M.E. (1980). *Competitive Strategy*. Free Press, New York.

- Ritter, T., & Pedersen, C. L. (2020). Digitization capability and the digitalization of business models in business-to-business firms: Past, present, and future. *Industrial Marketing Management*, 86, 180–190.
- Rolandsson, B., Alasoini, T., Berglund, T., Dølvik, J. E., Hedenus, A., Ilsøe, A., Larsen, T. P., Rasmussen, S., Steen, J. R., Hjelm, E., & Varje, P. (2020). *Digital Transformations of Traditional Work in the Nordic Countries*. TemaNord.
- Rowley, J. (2012). Conducting research interviews. *Management Research Review*, 35(3-4), 260–271.
- Saarikko, T., Westergren, U. H., & Blomquist, T. (2020). Digital transformation: Five recommendations for the digitally conscious firm. *Business Horizons*, 63(6), 825–839.
- Saunders, M., Lewis, P., & Thornhill, A. (2015). *Research Methods for Business Students*. Prentice Hall.
- Schallmo, D., Williams, C., & Boardman, L. (2017). DIGITAL TRANSFORMATION OF BUSINESS MODELS — BEST PRACTICE, ENABLERS, AND ROADMAP. *International Journal of Innovation Management*, 21(8), 1740014.
- Schneider, S., & Kokshagina, O. (2021). Digital transformation: What we have learned (thus far) and what is next. *Creativity and Innovation Management*, 30(2), 384-411.
- Schutt, R. K. (2006). *Investigating the social world: The process and practice of research* (5 ed.). Thousand Oaks, CA: Pine Forge.
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(Suppl.1), 388–393.
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63–75.
- Singh, A., Klarner, P., & Hess, T. (2020). How do chief digital officers pursue digital transformation activities? The role of organization design parameters. *Long Range Planning*, 53(3), 101890.
- Smith, W., Lewis, M., & Tushman, M. (2016). "Both/And" Leadership. *Harvard Business Review*, 94(5), 63.
- Strange, R., Chen, L., & Fleury, M. (2022). Digital Transformation and International Strategies. *Journal of International Management*, 28(4), 100968.

- Teece, D. J. (2010). Business models, business strategy and innovation. *Long range planning*, 43(2-3), 172-194.
- Teece, D. J., & Petricevic, O. (2020). *Capability-Based Theories of Multinational Enterprise Growth*, in Mellahi, K., Meyer, K., Narula, R., Surdu, I., & Verbeke, A. (2021). *The Oxford Handbook of International Business Strategy*. Oxford: Oxford University Press, Incorporated.
- Tekic, Z., & Koroteev, D. (2019). From disruptively digital to proudly analog: A holistic typology of digital transformation strategies. *Business Horizons*, 62(6), 683–693.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144.
- Wang, J., McGarrity, L., Prabhakaran, S., & Møller, T.H. (2022). *How can your digital investment strategy reach higher returns? EY-Parthenon*. Retrieved February 15, 2023, from [https://www.ey.com/en\\_gl/strategy/digital-investment-report#1](https://www.ey.com/en_gl/strategy/digital-investment-report#1).
- Warner, K. S., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52(3), 326–349.
- Westerman, G., Calmédjane, C., Bonnet, D., Ferraris, P., & McAfee, A. (2011). *Digital Transformation: A roadmap for billion-dollar organizations*. MIT Sloan Management. Capgemini Consulting.
- Westerman, G., Tannou, P., Bonnet, D., Ferraris, P., & McAfee, A. (2012). *The digital advantage: how digital leaders outperform their peers in every industry*. MIT Sloan Management, 2, 2-23. Capgemini Consulting.
- Zoppelletto, A., Orlandi, L. B., Zardini, A., Rossignoli, C., & Kraus, S. (2023). Organizational roles in the context of digital transformation: A micro-level perspective. *Journal of Business Research*, 157, 113563.

## Appendix A - Interview Guide

### 1. Introduction

- Introduce ourselves and our topic and thank the interviewee for participating.
- Thank the interviewee for signing the consent form.
- Ask for permission to audiotape the interview.

### 2. About the respondent

- How long have you worked at company X?
- How would you describe your role at company X?
  - *Probe:* Have you always worked in this role? If not, what have you done before?

### 3. Business Strategy

- Please tell us about the current business strategy of company X.
- How is the business strategy developed and by whom?
- What is your role with regard to the business strategy? How are you involved?
- How is the business strategy diffused throughout the company?
- How is the business strategy facilitated within the individual departments?

### 4. Digital Transformation (DT)

- What is your personal understanding of digital transformation?
- What is your understanding of digitalisation and digitisation with regard to DT?
- How does your role work towards and involve digitalisation?
- Is there a digital strategy in place? If no, why not? If yes, please describe it.
  - *Probe:* Is it linked to the business strategy? If no, why not? If yes, how?

### 5. Investments/Investment Decisions

- What sorts of investments regarding DT has your company made in the past years?
  - *Probe:* Can you give examples, please?
- Why are these investments considered?
- How integrated are the investments throughout the company?
  - *Probe:* Are these usually stand-alone investments or is there an investment portfolio?
- Can you describe the decision-making process behind an investment in digital technologies?
  - *Probe:* How do you decide on what to invest in?
  - *Probe:* Who initiates the investments?
  - *Probe:* How long does the decision-making process of these investments usually take?
- What is your role in the decision-making processes?
- How is the outcome/success of these investments measured?

### 6. Digital maturity

- Compared to your competitors in your industry, how mature do you think your digital initiatives are according to your digital transformation journey?



## **7. Closing the interview**

- Thank the interviewee for answering our questions and taking their time.
- Ask if the company and interviewee should be anonymous, then ask if the job title is fine to use.
- Do you have any questions for us?
- Ask for a recommendation from a manager/executive to interview at the company.